

January 1950

2nd Monthly

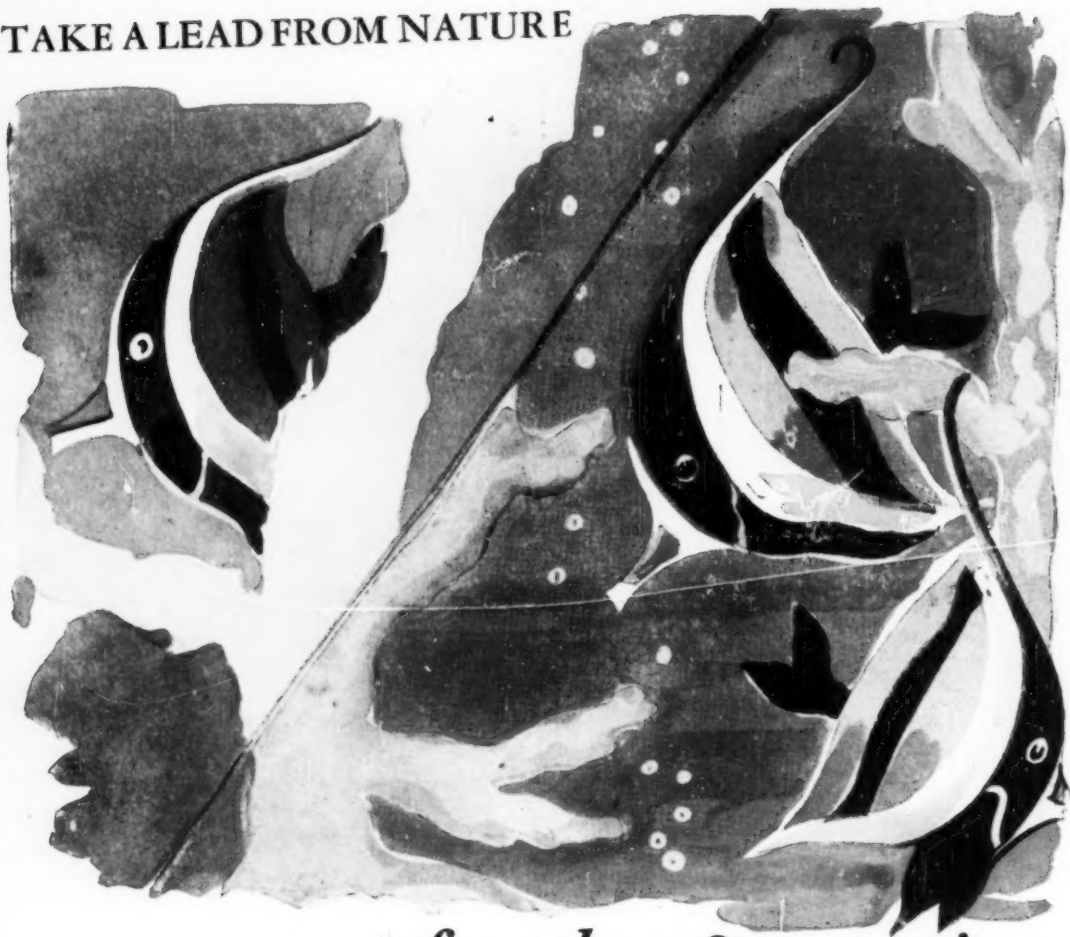
BUSINESS

The Journal of Management in Industry

16



TAKE A LEAD FROM NATURE



for colour & protection

Colour in nature serves a double purpose. So does a pack that looks enticing and shields the contents. In our up-to-date plant we link art, ability and experience into functional forms of attractive packages, making bags, wrappers, labels, cartons, of all descriptions—printing letterpress, litho or gravure . . . But it is in the realms of film and foil and their combination laminates that we come into our own. With these protective materials, we duplicate nature—sheltering and alluring. Let our Research Department solve *your* packaging problems!



BROWN BIBBY & GREGORY LTD
Colour Printers & Packaging Specialists

London Office: 9 Gratton St., W.1. Tel: Regent 2506 • Registered Office & Factory: Speke, Liverpool 19. Tel: Hunts Cross 1331

DICTAPHONE PRESENTS THE TIME-MASTER

a new conception of dictating machines!



**New plastic MEMOBELT gives clear,
uniform recording on smallest-ever machine!**

THE DICTAPHONE TIME-MASTER, with its plastic MEMOBELT, is an entirely new kind of dictating machine.

So easy to use! Just think out loud — the TIME-MASTER does the rest — lets you take full advantage of those moments between phone calls, interviews and conferences. You *instantly* record your thoughts without calling for secretary and notebook.

Records on Plastic Memobelt! The tiny plastic MEMOBELT marks a new advance in recording. It records clearly and uniformly — carrying on the Dictaphone principle of cylindrical recording. This makes possible constant speed, constant quality recording *and* uniform backspacing.

Each MEMOBELT takes 15 minutes' dictation. And you can post them in a standard envelope — as many as 10 at a time for 2½d.

Dictaphone Time-Masters are now manufactured entirely in England. This means a speeding up in deliveries.

Only the Time-Master offers all this!

1. Streamlined machine, only 4½ ins. high, slightly larger than a letter-head.
2. Uniformly clear recording and reproduction.
3. Uniform backspacing, rapid place finding.
4. Simple, automatic operation.
5. Mailable, filable, expendable MEMOBELTS, low-cost plastic medium.
6. Nation-wide service, Dictaphone dependability.

Write for TIME-MASTER literature to Dictaphone Co. Ltd.
(Dept. Q), 107 Kingsway, London, W.C.2.

DICTAPHONE

ELECTRONIC DICTATING MACHINES

Regd. Trade Mark

Branch offices: LEEDS NEWCASTLE BIRMINGHAM MANCHESTER LIVERPOOL BRISTOL GLASGOW DUBLIN BELFAST
BUSINESS FOR JANUARY, 1950



Today the exporter needs all the help he can get and reliable reports on world markets are essential to success. A global network of Commercial Diplomatic Officers, Trade Commissioners and other overseas officers is at the service of exporters, providing a continuous flow of reports on overseas commercial conditions, export opportunities

and surveys of the markets abroad for goods in demand. Through the Special Register Service, all this information can be sent promptly to you by post.

Why not add your name to the large number of business firms enrolled on the register? There is a nominal subscription fee of £1.10.0 a year.

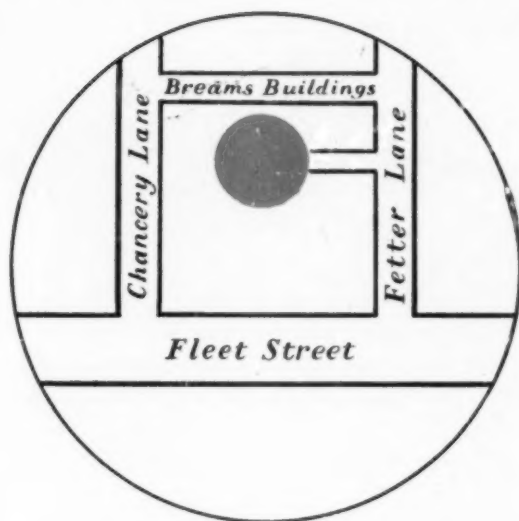
Apply to the

SPECIAL REGISTER SECTION (D)

**Commercial Relations & Export Department (Industries Branch)
Board of Trade, Thames House (North), Millbank, London, S.W.1**

or to any Regional Export Office of the Board of Trade

Phone enquiries to Victoria 9040. Extension 3151



Where the pound now buys more

Just a year ago, the average number of people buying the Daily Mirror every day was 3,700,000. To reach this number of prospective buyers, advertisers spent £14.16.4 on every column inch of space.

Now, the number of people buying the Daily Mirror each day has gone up to over 4½ million. With the largest daily sale in the world, advertisers still only pay £14.16.4 per column inch.

In other words, in twelve months the value of the pound invested on space in the Daily Mirror has increased by 21.6%.

To advertise to 1,000 people costs only .79 of a penny per column inch.

Daily Mirror

THE GREATEST INFLUENCE IN DAILY JOURNALISM
JANUARY, 1950

Handsome is —and handsome does

SUPERB in performance as it is beautiful in line, the **Banda 90** combines many new features to make every copying job in the office easier and more economical.

Internal forms and memoranda, order and invoice systems, circular letters, minutes and agenda, reports, graphs, charts, diagrams—anything, in fact, requiring copies can be produced on the **Banda 90** with speed and simplicity, without waste and without mess.

No ink, stencils, or gelatine are needed; masters can be handwritten, drawn, or typed with equal ease, and with no more trouble than typing a letter. As many as seven colours can be obtained at one operation from one master, and copies are produced on non-absorbent paper or card.

But you don't know just how much the **Banda 90** can do for you until you have seen it in operation—on your own work. Fill in and return the coupon, and we shall be happy to come along and show you the



The Banda 90 series includes electrically and hand-operated models, producing copies from 1in. x 3in. to 17in. x 30in.

Banda 90

THE FINEST DUPLICATOR OF ALL

BLOCK & ANDERSON Ltd.

58-60 KENSINGTON CHURCH ST., LONDON, W.8

WEStERN 2531

Branches throughout Great Britain

I should like to see the **BANDA 90** at work.

You may call on me at.....o'clock. on
(date), or telephone for an
appointment on.....

Name.....

Business.....

Address.....

Telephone

To **BLOCK & ANDERSON Ltd.**,
58-60 Kensington Church Street, London, W.8

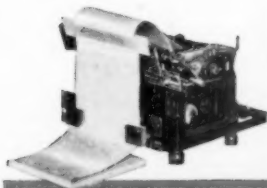
No more office bottlenecks—

Century CONTINUOUS STATIONERY

keeps business flowing

I'm a man who believes that, in a well-run business, it's uneconomical to have staff working overtime clearing up invoices, over-due orders, receipts and so on! That's why Century Continuous Stationery plays an important part in my brewery—as a time-saver it's phenomenal. Even those in less complex trades will welcome its great additional saving in office staff and costs.

On the despatch side, we are all in favour of Century Continuous Stationery. It makes our life so much easier! We can now depend on getting **correct** delivery instructions—and on time. No more last-minute panics and rushes.



CENTURY CONTINUOUS STATIONERY saves time, money, and temper in every business. Use it for all multiple forms and note how office output goes up. No more sorting of loose forms and carbons, no more lost or illegible copies. Any quality of paper can be used and any method of printing, perforating or punching. With a simple inexpensive attachment, these labour-saving forms can be used with any typewriter—which is then still free for other jobs.

Post this coupon for full particulars of this remarkable advance in business stationery.

Messrs. John Dickinson & Co.
Ltd., (S.S.), Apsey Mills,
Hemel Hempstead, Herts.

Please send me full details of Century Continuous Stationery.

Name of enquirer _____

Name of usual printer _____

R.S.

with simple tools and

DEXION

SLOTTED ANGLE

.... you can
save pounds in
equipment costs

At last, the idea you have been waiting for! Cut costs, eliminate delays, get more value than ever before from your existing space by making up your own equipment with Dexion Angle. Any unskilled person can do it with simple tools, for Dexion is already slotted for bolting together. It's as easy to use as "Meccano."

MANY USES

All kinds of equipment can be quickly assembled that might take weeks or months to get from outside suppliers—and at a remarkable saving in cost. It can be built to the exact size you want, taking full advantage of the odd shaped spaces and corners, wall area over other fixtures and even the roof.

EVERLASTING

Dexion Angle is amazingly rigid and needs no bracing. You can use it over and over again for different purposes—it never deteriorates.

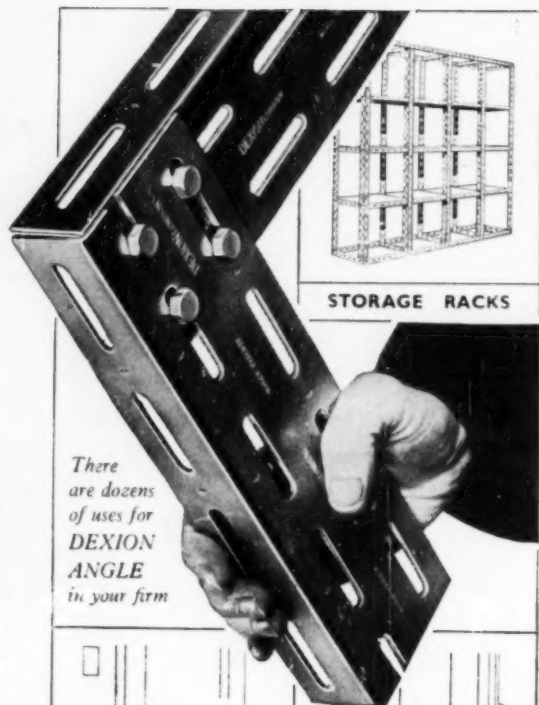


Try Dexion once and you will never be without a stock. It will prove its value to you many times over—you will think of dozens of uses for it from the moment you get it. Send for further details and opinions of well known users.

A small stock of DEXION ANGLE makes a van load of equipment.

Send for illustrated folder, A.I. Better still, come and see a comprehensive installation of Dexion under actual industrial conditions at:—

DEXION LTD 34 Fouberts Place, London, W.I.
Telephone—GERrard 2039. Telegrams—Dexion, Piccy, London.

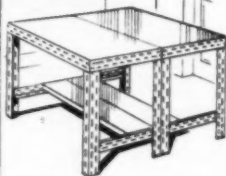


STORAGE RACKS

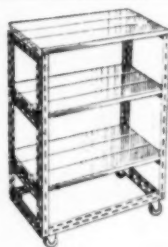
There are dozens of uses for DEXION ANGLE in your firm



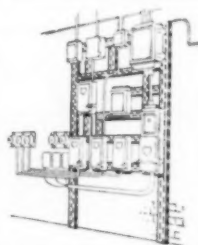
MACHINE GUARDS



WORK BENCHES



TROLLEYS



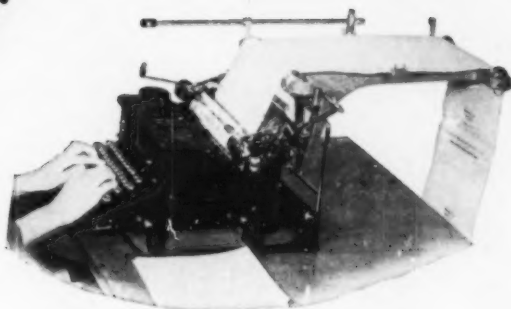
SWITCHGEAR MOUNTS



SECTIONS BUILT UP OF DEXION ANGLE
Single angle is immensely strong but for even greater strength it may be bolted into sections as above.
Dexion Angle is protected by Brit. No. 620, 633 and world patents.



Continuity Girl



Continuity girls are as important to the smooth running of any business as they are to the world of celluloid. But in the commercial sphere a continuity girl's job is much less harrasing. She knows there will be no "retakes", no technical hitches. Each day's work progresses accurately and in double-quick time. On the "set" every part is word perfect with no fear of straying from the script. In other words Lamson Paragon Continuous Fanfold Forms give that continuity of typing which boosts output. The all-in-one make-up of the Fanfold Forms effectively precludes missed forms and non-register of parts — Fanfold Forms are continuous in width and length.



LONDON, E.16

Telephone: ALBert Dock 3222

ENQUIRY ONLY

Please send further information concerning
LAMSON PARAGON FANFOLD FORMS to

NAME

FIRM NAME

ADDRESS

BUSINESS

to be continued

I KNOW the letter's lost, so what?



When your boss breathes fire and brimstone because you cannot find a letter or a file that he wants, suggest to him (very tactfully, of course) that the complete cure for filing problems and the danger of mislaid correspondence is Roneo Visible-80 filing. It reduces filing to the simplest and safest possible formula. Letters or any other documents cannot be lost. You can put your hand instantly upon any file you want. His time and money as well as yours will be saved. Persuade him to call in Roneo.



SAFELY FILED



SAFELY FOUND

*You could put YOUR filing in order by
NEXT WEEK if you install*

RONEO

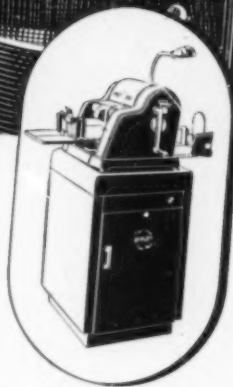
**VISIBLE-80
FILING**

RONEO LTD • 17 Southampton Row, London, W.C.1 • Tel: HOLborn 7622 • Branches throughout the country

About time we had a bit of Roneo colour



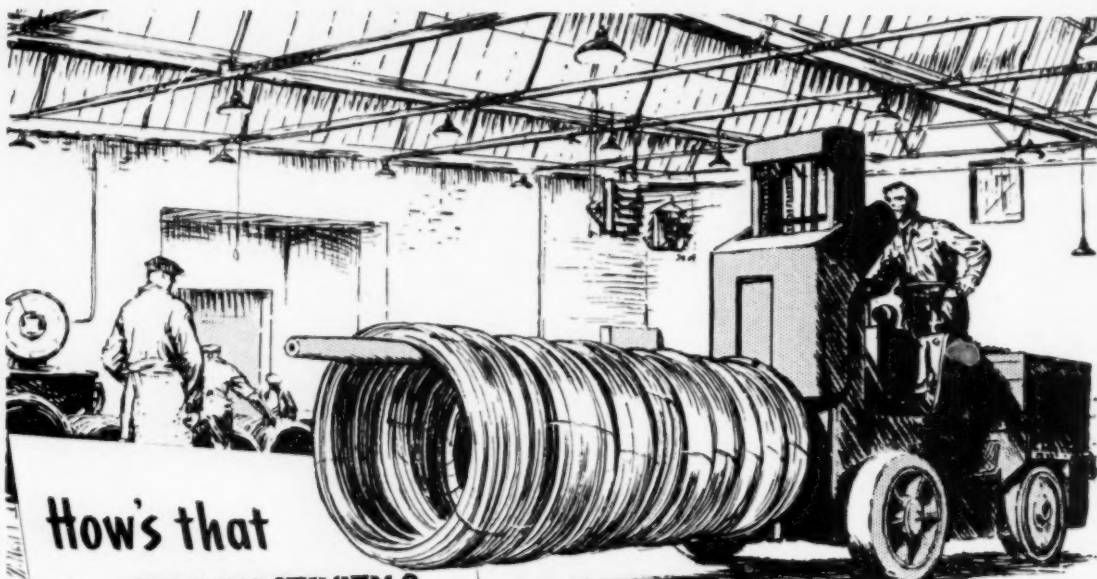
If you are still turning out circulars that are not very attractive in one colour, draw the attention of your boss to the advantages of Roneo "500". It will save him money and make life a lot easier for you. You can print in many colours; there is no need to interleave, even with double sided work on normal duplicating paper; ink goes twice as far; you don't waste stencils; every copy is usable; and, don't forget, your hands are clean from start to finish.



Persuade him to call in **RONEO "500"**
SERIES II
THE DUPLICATOR WITH THE SPECIAL INKING SYSTEM

RONEO LTD • 17 Southampton Row, London, W.C.1 • Tel: HOLborn 7622 • Branches throughout the country

He's loading 6 tons in 15 minutes...



**How's that
for PRODUCTIVITY?**

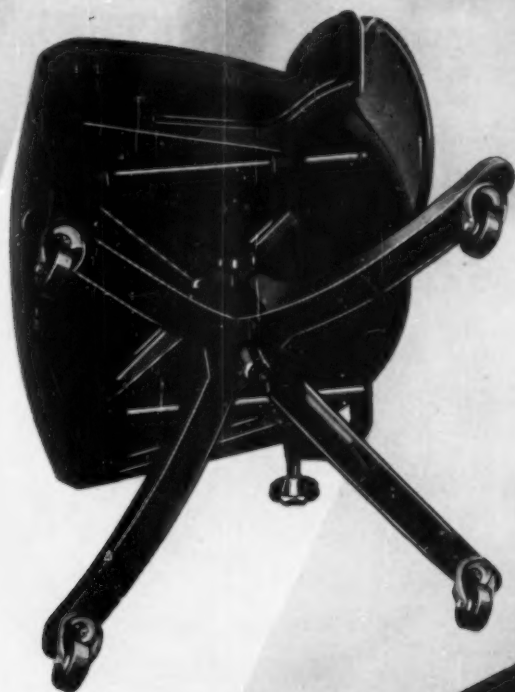
Heavy stuff, steel wire. Awkward to handle, too. Getting the day's despatch quota away on the lorries was a major headache—till this big wire works went over to mechanical handling. Today, one man with one electric truck lifts and carries and loads 6 tons in half the time a gang of men needed to do the same job. A bottle-neck has been eliminated. A heavy wage bill has been cut by 80%. And the same thing is happening in works and factories all over the country. Wherever handling is taken over by these new electric trucks—silent, easy to operate, speedy, fumeless & cheap to run—costs are cut, output is raised and wasted manpower freed for productive work.

For mechanical handling at lowest cost

ELECTRIC TRUCKS POWERED BY

Exide-Ironclad
BATTERIES

ISSUED BY THE CHLORIDE ELECTRICAL STORAGE COMPANY LIMITED . 77 KING STREET . MANCHESTER 2



● take a look at quality

Not until you have seen a Tan-Sad office chair
from every angle can you really appreciate the
high standard of Tan-Sad quality



Tan-Sad

OCCUPATIONAL SEATING

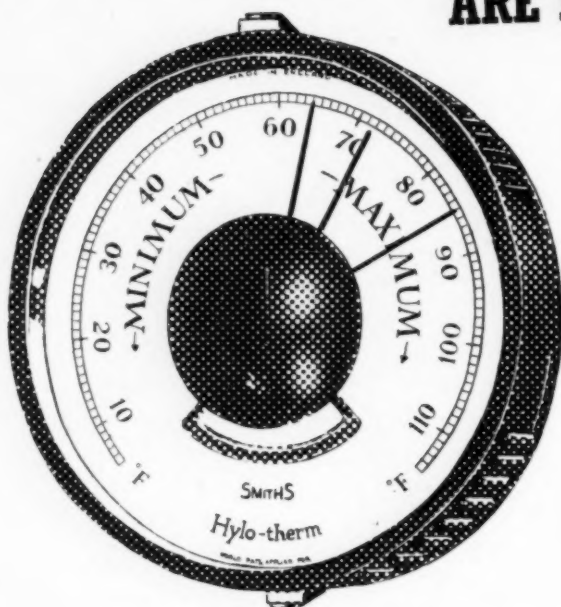
THE TAN-SAD CHAIR CO. (1931) LTD

EVERY HOUSE · CLERKENWELL GREEN · LONDON · E.C.1
Phone: CLERKENWELL 31923

**THEY KNOW THE TEMPERATURE WHEN THEY
ARE NOT THERE**



THE DOCTOR



THE SMALLHOLDER



THE FACTORY MANAGER



THE POULTRY KEEPER

SMITHS HYLOTHERMS

**SATISFY THE
WIDE DEMAND FOR**

C.T.R. ★ (CHECKED
TEMPERATURE
RECORDING)


**BY FACTORIES, WAREHOUSES,
HOSPITALS, SCHOOLS, AND
BY FARMERS, POULTRY KEEPERS,
etc., etc.**

By recording with certainty the maximum and minimum temperatures over any period, Smiths HYLOTHERMS offer constant safeguard against damaging temperature variations. Accurate balancing and positive locking of pointers ensure absolute reliability and press button makes resetting instantaneous. Strong rust and weatherproof cases. Gimbal bracket supplied for wall-fixing.

PRICE: 49/6



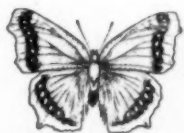
SMITHS ENGLISH CLOCKS LTD., SECTRIC HOUSE, LONDON, N.W.2
The Clock and Watch Division of S. Smith & Sons (England) Limited



ALL METHODS OF TRANSPORT DEMAND THE BEST PACKING MATERIALS

Wise Manufacturers use -

- ★ **NONCURLING GUMMED PAPERS** for labelling of every description
- ★ **"GUMSTRIP" SEALING TAPES & MACHINES** for sealing all parcels and packets
- ★ **"SAMSON" ADHESIVES** for every trade
- ★ **SELF-ADHESIVE SEALING TAPES** for all products - security - protection & airtight sealing
- ★ **HEATFIX & SYNTHETIC RESIN PAPERS**
- ★ **WATERPROOF MATERIAL** for home and export packing



BUTTERFLY BRAND

SAMUEL JONES & COMPANY LIMITED
New Bridge Street, London, E.C.4. Central 6500

... if that's Jones



he always has his facts right
—and at his finger tips

There's only one way to a reputation of that kind — systematic organisation of facts and figures so that instant reference leaves no loophole for slips and oversights, in one word, SELDEX.

SELDEX Systems are designed for the individual need of each client. They are constructed to provide at a glance the complete picture of the day-to-day situation. Any irregularity is signalled and a flip of the finger

puts all the related information under your eye. Settling queries is the work of a moment. Extracts and correlations are made in a fraction of the usual time. Relations of enquiries to quotations, to orders, to production, to materials, and sales to buying, are greatly simplified. Many outstandingly efficient firms are today using SELDEX All-British Systems. Let us send you particulars in greater detail. Snip the coupon.

SELDEX

**SELDEX FOCUSES
YOUR FACTS**

VISIBLE RECORDING SYSTEMS



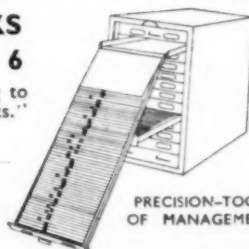
**SELDEX LTD., (DEPT. C.) SELDEX WORKS
WITTON • BIRMINGHAM • 6**

Please send me details of Seldex Systems particularly relating to Departments and a free copy of "Seldex, how it works."

Name _____

Firm _____

Address _____



**PRECISION TOOL
OF MANAGEMENT**

You pay **TWICE**
for the same job
ONE *writing is enough*
with
FANFOLD *business forms*



For example, X WERE MAKING One Typing for Purchase Order to Supplier covering delivery of material direct to customer, a second typing for Invoice to Customer, with necessary internal forms

NOW USING One Typewriter, One Writing, FANFOLD saved two re-writings, combined two entirely different sets of forms into one Complete Set.

A simple Form Survey will show you how such savings could be secured for your own business.

You *do* pay twice when forms take twice the time they should . . . when typists have to insert carbons, line up copies. You pay twice when forms take twice the *effort* . . . when they have to be re-copied for each new use, or to correct needless errors. One writing is enough with Fanfold forms. Carbons are pre-set, copies pre-aligned, so there is no waste time in typing, and no waste effort thereafter—one writing makes every copy the job requires.

The result is pounds saved. In any kind of business—wholesale, retail, manufacturing, general office.

Find out where *you* can save. Call in Fanfold for a survey of your business form requirements. There is no charge for this service and no obligation whatever.

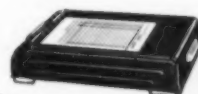
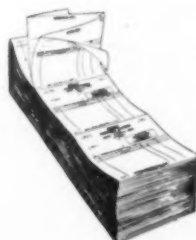


FANFOLD
for
FORMS

NORTH CIRCULAR ROAD, LONDON, N.W.2
 Telephone: GLAdstone 5477 (3 Lines)
 and at BIRMINGHAM, CARDIFF MANCHESTER, SHEFFIELD, GLASGOW
**PLANNERS OF SYSTEMS FOR ECONOMY OF TIME,
 LABOUR AND MATERIALS IN THE OFFICE**

FANFOLD
for
FORMS

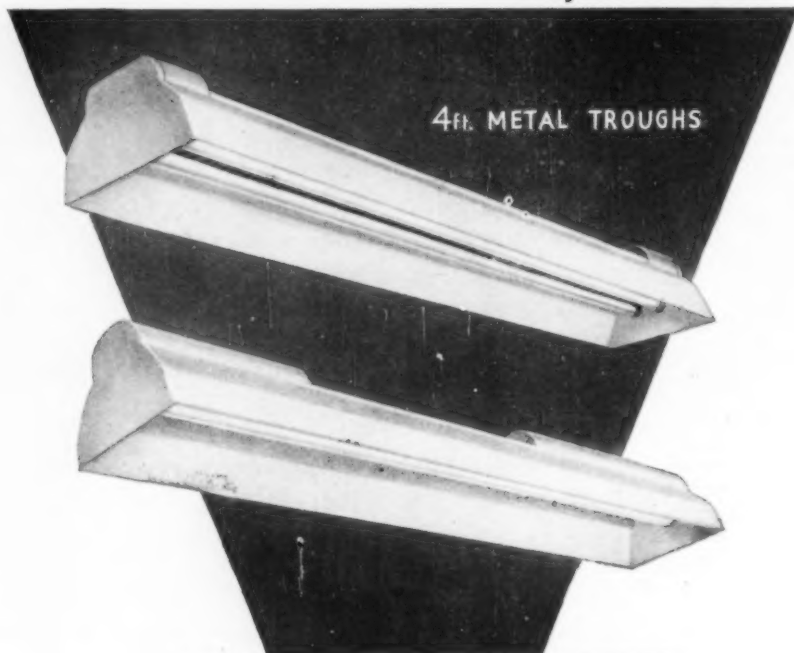
Right and below: Continuous Forms for Continuous Typing and Business Machine Records



Above: Autographic Registers and Register Forms

Left: Single Sets of Spot-Carboned "Transkrip" Forms

Above all — easy on the eye,
easy to erect,
easy to maintain



4ft. METAL TROUGHS

These are examples from the wide range of lighting fittings in our publication S.P. 7121/21. Avail yourself of the help and advice of lighting specialists and instal

METROVICK
Lighting



METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

ST. PAUL'S CORNER, 1/3, ST. PAUL'S CHURCHYARD, LONDON E.C.4.

S/F901

SIMPLER WAGES ROUTINE

saves clerical time

Thousands of firms now avoid pay day rush

The last-minute rush that used to characterise pay day in many offices has been deprived of its terrors. Firms using the 'Copy-Writer' method of preparing wages find that it shows a saving of time of as much as 50%. This factor is particularly valuable for those firms wanting to make up wages as soon as possible after the end of the pay week. The 'Copy-Writer' method not only helps the wages staff to 'beat the clock', but gives a greater measure of accuracy to the work.

Three-in-one method

cuts out unnecessary work

Under the Kalamazoo 'Copy-Writer' method, three separate records are written up at one operation—the Pay Roll, Individual Earnings Records, and Pay Advices. When the totals on the Pay



Roll have been checked the Pay Advices are known to be correct and are immediately ready for the pay packets.

Unaffected by power cuts

The 'Copy-Writer' wages method gives the user many of the advantages of a mechanised system by enabling all related records to be prepared simultaneously. On the other hand, being a manual method, it cannot result in a bottleneck in the wages routine; nor is it affected in any way by failure of the electric supply.

Opportunity knocks as new Tax Year approaches

In considering any change in wages routine an important point to consider is whether the necessary equipment and stationery can be obtained

No installation headaches

To enable every user to get the greatest possible benefit from the 'Copy-Writer' method, experienced Kalamazoo operators will in all cases instruct the wages staff in the operation of the system. No charge is made for this service, which ensures a smooth change-over and complete understanding of the system by those concerned.

in good time before the start of the Income Tax year in April. In spite of the popularity of the 'Copy-Writer' method, orders placed now for new installations will be executed in ample time for the change-over.

Workers appreciate having this information

Many of the eight thousand users of the 'Copy-Writer' wages method have voluntarily testified to the



benefits it has brought them. Here are three excerpts from typical letters of appreciation:

"In the first year it has more than paid for itself in the great saving of time, and in the accuracy and simplicity it provides."

"It enables one person to combine the work of three, with consequent saving of time . . ."

"Our employees appreciate having the additional information now made available on their pay dockets . . . under your system the provision of this information does not involve any extra labour at all."

* * *

LOOK AHEAD!—Post this coupon today and let Kalamazoo help you to banish those wages problems.

CUT HERE

Kalamazoo Ltd., Birmingham 31.

Please give me full information about the 'Copy-Writer' wages method, without any obligation on my part.

NAME _____

ADDRESS _____

TAYLORS *for all makes of* TYPEWRITERS

★ Adding Machines, Duplicators, Cash Registers, Calculators, Time Recorders, and All Business Appliances **BOUGHT, EXCHANGED, HIRED AND REPAIRED**

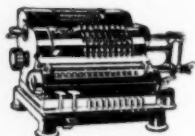


Save Time—HIRE an Adder for Stocktaking

ADDOGRAPH the simplest Portable, adding, and listing machine—delightful to use. 8 col. to add from $\frac{1}{4}$ d. to £9,999 19s. 11 $\frac{1}{2}$ d. 9 col. to add from $\frac{1}{4}$ d. to £99,999 19s. 11 $\frac{1}{2}$ d. Hand and electric models with or without subtraction and wide paper carriages. No modern office can afford to be without one.



THE TAPPIT ALL-RUBBER DAMPER. Ever Ready and Hygienic. A squeeze controls feed of moisture. 2/- post free.

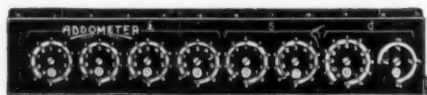


ROTARY CALCULATORS ALL MAKES. For all calculations. Multiply, divide, add and subtract in 1/10th time taken to do so mentally.



ELIMINATE LOSS AND FRAUD BY USING A "SAFEGUARD," THE BEST CHEQUE PROTECTOR. Used by leading banks and firms. Do you realise that an altered cheque is your own liability? Price £10 10s. All makes of Cheque Writers at bargain Prices.

NO MORE ERRORS — IF YOU USE THE GUARANTEED ADDOMETER



Rapid Automatic Addition and Subtraction. Rests flat on the books. For Decimal or Ordinary Figures and Feet and Inches etc. FOR POCKET OR DESK. So simple anyone can use it in Plush-lined duroid case. Size, 11 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x $\frac{1}{2}$ ".

When ordering state for what purpose required.

* All models price 6 guineas.

★ WANTED URGENTLY

HIGHEST PRICES PAID for all Makes of Modern Office Machinery: Adders, Calculators, Cashiers, Addressers, Duplicators, Typewriters, Steel Safes, and Steel or Wood Office Furniture

★ IN STOCK

A few Visible Index Systems for sale. Safes, Desks, Chairs and Tables

TAYLORS TYPEWRITER MARKET

Write, Call or 'phone HOLborn 3793

74 CHANCERY LANE (Holborn End) LONDON W.C.2 and at Maidenhead

COMFORTING THOUGHT



SP.9



SP.10

After too long an interval Pel Chairs are back on the office market again. And a good thing, too! Those who do a lot of sitting will sit a lot more comfortably, and the office will look a brighter place.

Pel Tubular steel furniture is well finished, light in weight, and extremely strong. It keeps its good appearance to the very end of a long life. The chairs illustrated are only a part of a much larger range. *Write for details.*




RP.8

PEL LOOKS WELL

IN THE OFFICE



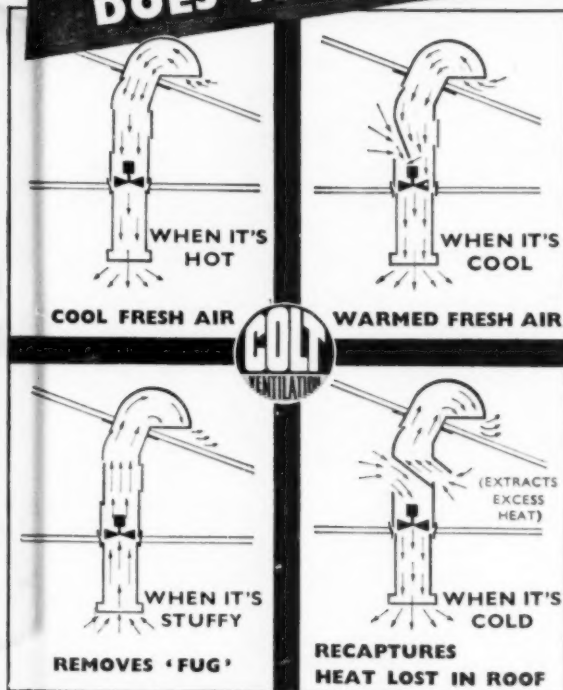
MADE BY PEL LTD • OLDBURY • BIRMINGHAM A  COMPANY

London Showrooms: 15, Henrietta Place, W.1.

*We cannot control the climate — but we **CAN** control its effects*

WHATEVER THE SEASON

**A single ventilator
DOES ALL THIS**



THE COLT INFLOW UNIT (PROV. PAT)

One of the Colt range of industrial ventilators.

A FOUR PURPOSE VENTILATOR FOR THE FOUR SEASONS. Handles 100,000 cu. ft. of air per hour. Fitted with multi-directional air flow projector. EASILY INSTALLED WITHOUT SKILLED LABOUR IN ANY TYPE OF BUILDING. Write for Technical Data M 118, COLT VENTILATION LTD., SURBITON, SURREY. ELMbridge 6511-5.

COLT VENTILATION

INDUSTRIAL AND DOMESTIC

Also at Birmingham, Bradford, Bristol, Kilmarnock, Manchester, Newcastle, Newport (Mon.), and Sheffield.



Music raises production rate during the doldrum hours

We have all seen (and probably experienced!) how a Regimental Band puts new life into troops on the march.

Music has just the same stimulating effect on factory and office workers when routine and repetition work begin to pall. Introduced at the right moment, it will help to keep your production rate at a steady high level.

20 years' experience of 'Music While You Work' enables Rediffusion to give advice not only on its installation but on its operation.

Send for your copy of the brochure which describes and illustrates how the Rediffusion system works.

REDIFFUSION

CARLTON HOUSE, LOWER REGENT STREET, LONDON, S.W.1
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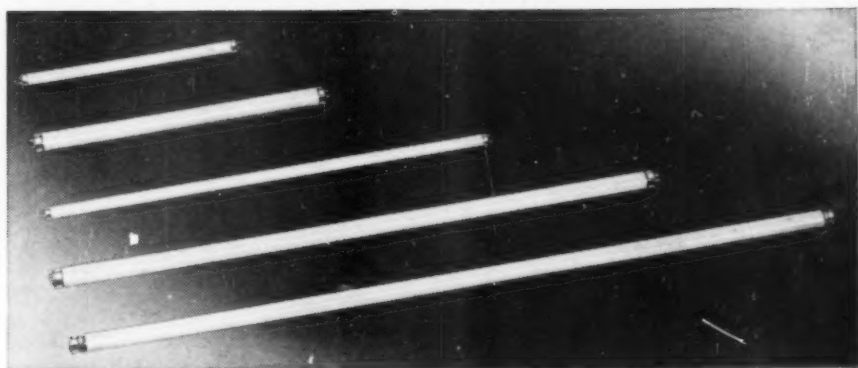


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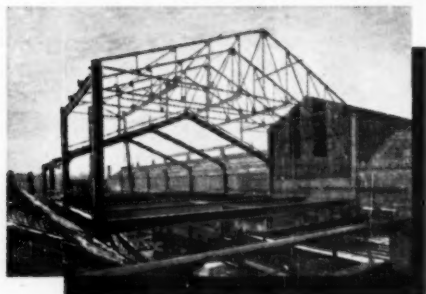
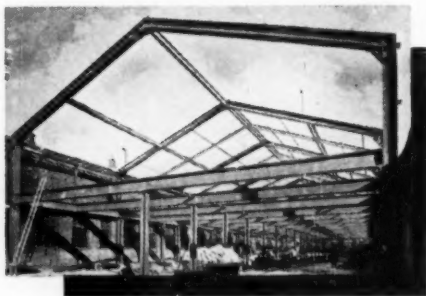
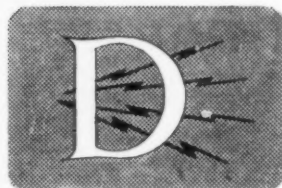
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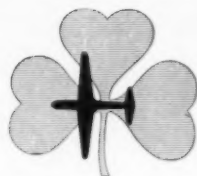
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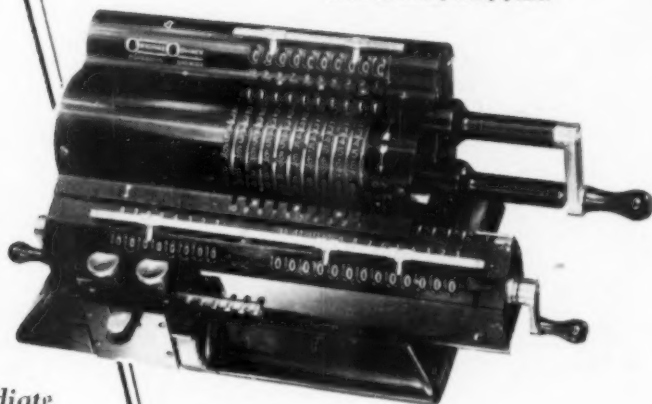


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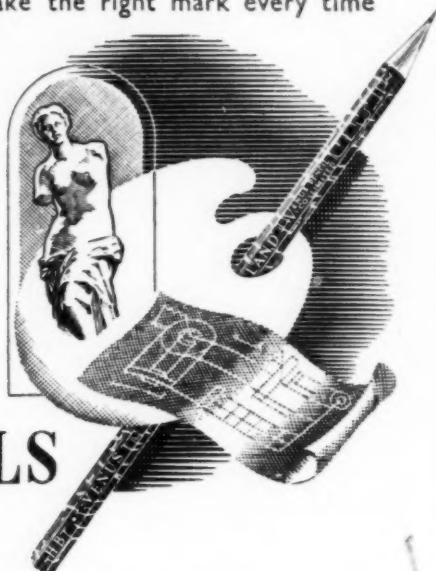
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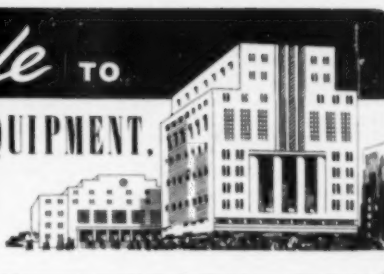
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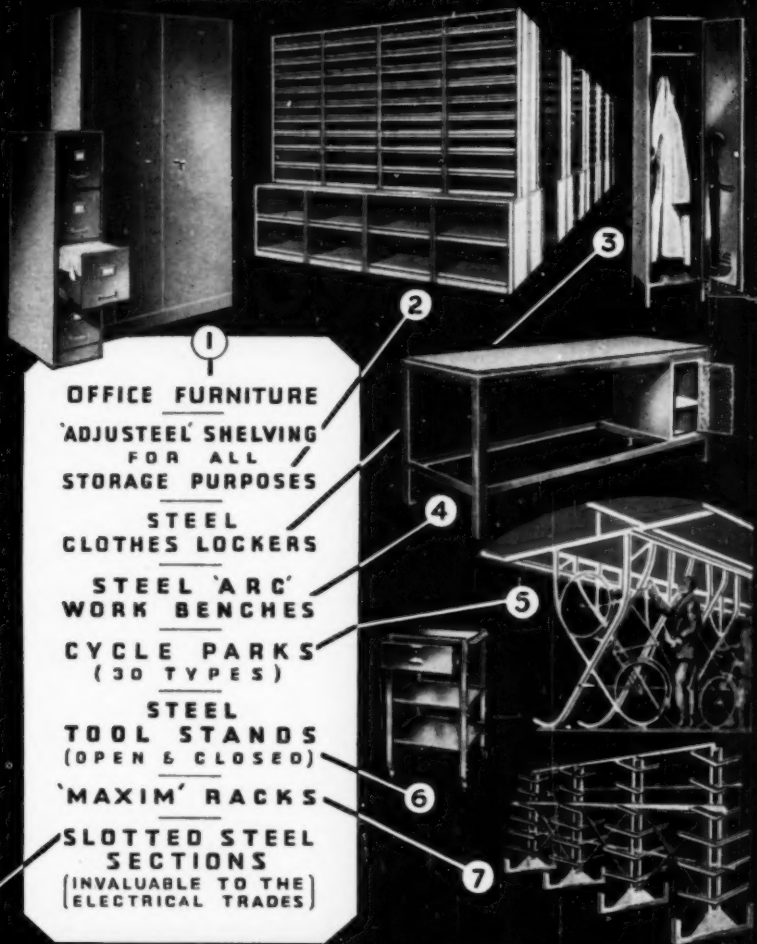
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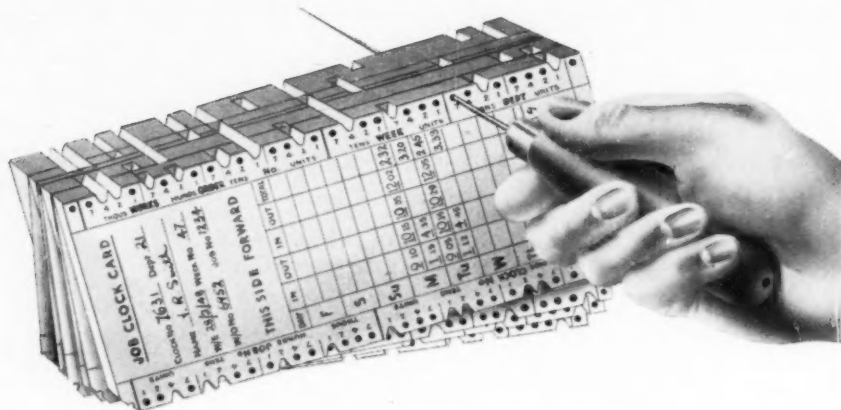
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The MARCH of BUSINESS

ECONOMISTS LOOK AHEAD

AT the turn of the year, business men tend to peer ahead into the misty future and speculate on what the coming twelve months hold for them. So do economists. In the latest issue of the *Bulletin* of the London and Cambridge Economic Service, Messrs. C. F. Carter and R. C. Tress give a reasoned if cautious guess as to what is going to happen to the national economy in 1950.

Economic forecasting is always a dangerous pastime, since the cat can jump so many different ways. The two major imponderables at the moment are the effects of de-

valuation and the result of the coming election, while a third, the possibility of an American slump, may well become important before the end of the year.

It is too soon to give more than a guess as to the total effect of the devaluation of sterling on the dollar gap, but the writers do not anticipate that the United Kingdom will do more than "slightly improve" her dollar earnings next year. The gap will remain as high as \$500 to \$550m. Other factors, such as the deficit in invisible trade, dollar capital outflow, and the deficits of the rest of the sterling area, will bring the total gap up to \$1,225 to \$1,275 m.

Against this deficit we may presumably set \$900m. of Marshall Aid, \$80m. for Colonial development from the International Bank and \$70m. from additional commodity stock piling by the United States and Canada. Thus the residual dollar gap would be \$200m. against a gold and dollar stock remaining at the end of September of \$1,415m. The sterling area (apart from the U.K.) has drawing rights of \$175m. a year, thus, with the import cuts and Marshall Aid, we may just scrape through 1950.

On the home front the major impact of devaluation will be felt in rising prices and the authors estimate that the price level of

The Prospect Before Us—Tasks for 1950

BRITISH businessmen enter 1950 fully conscious of the tasks ahead. They are, on the production side, to reduce costs and overheads and to increase productivity, whether of factory or office, management or worker; and on the selling side, to set up salesmanship, particularly in the export trade. These problems need no emphasis: they have been publicised ad infinitum and, when Government exhortations are added, ad nauseam.

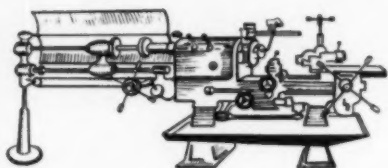
"*BUSINESS*" believes that example is better than precept. One actual case history of achievement is worth a thousand general theories. Our aim has always been to present the practical "How" of achievement. The New Year will see no change in this old, basic editorial policy.

FOR EXAMPLE, this January issue, in a new and enlarged format which has been made possible by the ever increasing support of readers and advertisers, opens with a series of important

case-histories of how firms have successfully tackled the very problems facing businessmen in 1950. By simplification, standardization or specialization—two significant reports on which were featured in our last issue—they are already cutting costs, raising output and increasing export sales.

THESE techniques are only three of the ways by which progressive firms are tackling to-day's problems. Incentive schemes to raise output and lower absenteeism are among the methods now much to the fore; specific examples of such schemes in operation will be described in our next issue. The March issue will see examined, under the spotlight of actual practice, the vital subject of employer-employee relationships. And so through the year "*BUSINESS*" will bring its readers in touch, month by month, with the case-histories of achievement in the higher tasks of management.

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consumer goods in nine or twelve months time might be as much as seven or eight per cent. above present levels, though a rise in productivity might reduce this by some two per cent. A figure of ten per cent. or more is not inconceivable.

An increase in prices on this scale may well set up a further inflationary spiral and it is here that the second imponderable comes in. Whatever government is elected at the forthcoming election will have to enforce a deflationary policy which will involve some transitional unemployment. The methods and degree of urgency with which such a policy is carried out are completely uncertain, but they represent the ultimate keys to the answer to the question of Britain's survival in 1950.

THE FASHION IN INCENTIVES

TO advocate the payment of incentives in order to obtain higher output is becoming fashionable. In the last few weeks Lord McGowan and other leading industrialists, Mr. Attlee, Mr. Herbert Morrison and other Government spokesmen and even the General Council of the Trades Unions Congress have all gone on record as advocates of incentives (though the T.U.C. would limit them to lower-paid workers).

To BUSINESS that has consistently advocated the use of bonus incentive schemes over a period of many years, such an unaccustomed unanimity is at once gratifying and somewhat alarming. The alarm is caused by the possibility (indeed, probability) that some, at least, of the incentive schemes now being so actively canvassed will be adopted without consideration of special circumstances and consequently fail. A crop of such failures might well cause even wise men to doubt the efficacy of incentives under any conditions and inhibit schemes that might well prove successful in raising productivity over a wide range of industry.

Incentives are tricky things. Most of the current talk is of money incentives. But experience

SALIENT FIGURES OF THE MONTH

MANPOWER

	Latest Month	Increase (+) or Decrease (—) on Month Ago	Increase (+) or Decrease (—) on Year Ago
Total manufacturing industries .. (thousands)	* 8,311	+ 29	?
Cotton spinning and weaving do.	* 323.5	+ 0.8	+ 9.7
Coal (on colliery books) .. do.	710	— 5	— 14
Reg. unemployed (G. B.) .. do.	300.3	+ 31.4	— 14.2

PRODUCTION

Index of production (1946=100)	132	+ 13	+ 8
Coal (average weekly output) .. (thousand tons)	4,364	+ 128	+ 131
Steel ingots and castings (do.) .. do.	307	+ 1	+ 10
Cotton yarn (do.) (million lbs.)	17.7	+ 1.0	+ 0.8
Woven wool fabrics (do.) (million linear yards)	24.8	+ 3.0	+ 0.2
Passenger cars (do.) (thousands)	9.42	+ 0.7	+ 2.88
Commercial vehicles (do.) do.	4.94	+ 0.43	+ 1.04
Permanent houses completed do.	16.37	— 0.42	— 2.24

TRADE

Value of imports .. (£ millions)	198.9	+ 17.8	+ 24.9
Value of exports do.	156.0	+ 14.0	+ 15.8
Volume of exports (1938=100)	158	+ 15.8	+ 10.9
Freight train traffic (million tons)	5.47	+ 0.16	+ 0.06
Retail sales (1947=100)	* 120	+ 5	+ 7

FINANCE

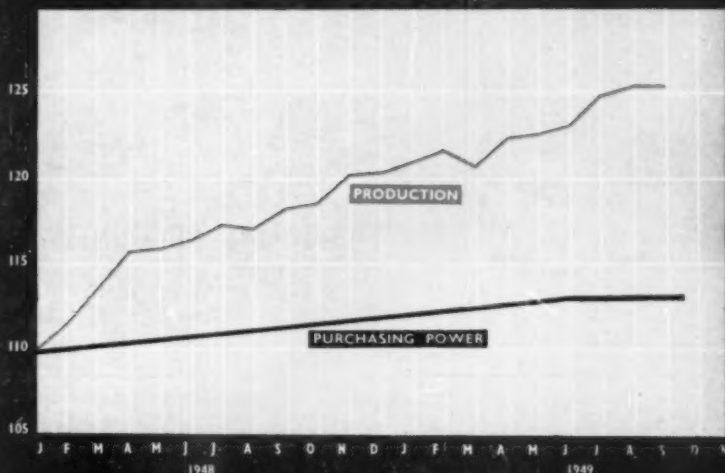
Currency in circulation (£ m.)	1,241	— 3	+ 19
Deposits in London Clearing Banks do.	6,050	+ 41	+ 10
Provincial cheque clearings (av. working day) do.	6.30	+ 0.69	+ 0.59

WAGES AND PRICES

Weekly wage rates (1947=100)	109	Same	+ 2
Retail prices .. (1947=100)	112	Same	+ 4
Wholesale prices .. (1938=100)	232.8	+ 6.3	+ 16.1
Basic materials do.	313.0	+ 5.8	— 9.5
Intermediate do.	254.6	+ 6.0	+ 14.9
Manufactures do.	200.1	+ 1.1	+ 9.5
Import prices do.	121	+ 10	+ 5
Export prices do.	113	Same	+ 1

* September; all other figures refer to October.

BUSINESS INDICES (1946=100)





How many hours make Eight?

If they are hours, just units of time, then, of course, eight hours—no more and no less—make eight hours. If, on the other hand they are working hours, then the Powers-Samas system of mechanised accounting certainly gives each hour considerably added value. It speeds through all accounting, costing and statistical analysing, increasing the productivity of every working hour. And that is not all. This system ensures complete accuracy, presents information in unusual detail and reduces overheads. If you would like to see how Powers-Samas mechanised accounting increases the effectiveness of working hours in your own organisation, write to-day for a demonstration.



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has shown that money is not the only incentive to harder work and may not be the most important. Indeed, under certain circumstances it may prove an actual disincentive.

Under conditions of acute labour shortage, when earnings under incentive schemes or piece rates have rocketed up and consumer goods have been limited, the tendency has been not for output to increase but for absenteeism to go up. Many a worker will be content with less than he might earn in a full week if he can have an odd day or two off. In other words, more leisure can be a greater incentive than more money.

At least one firm has turned this apparent failing to account. The firm in question, a laundry, introduced a bonus incentive scheme of the normal pattern, with money bonuses paid for high output. Most of their workers were married women, and took advantage of the scheme to maintain their earnings at the status quo and take the Friday off for shopping. Output remained the same, but absenteeism and costs went up. The scheme was then revised. A weekly target was fixed for each worker, equivalent to a full week's work, and a flat payment made for the work done. If the worker got through her quota by Thursday afternoon or Friday, she took the rest of the week off. This arrangement satisfied the workers, and, by ensuring a full week's work from all concerned, satisfied this management.

Leisure, of course, is not the only non-material incentive. The

How the Chart is Calculated

The adjacent chart is compiled from figures derived from the INTERIM INDEX OF INDUSTRIAL PRODUCTION.

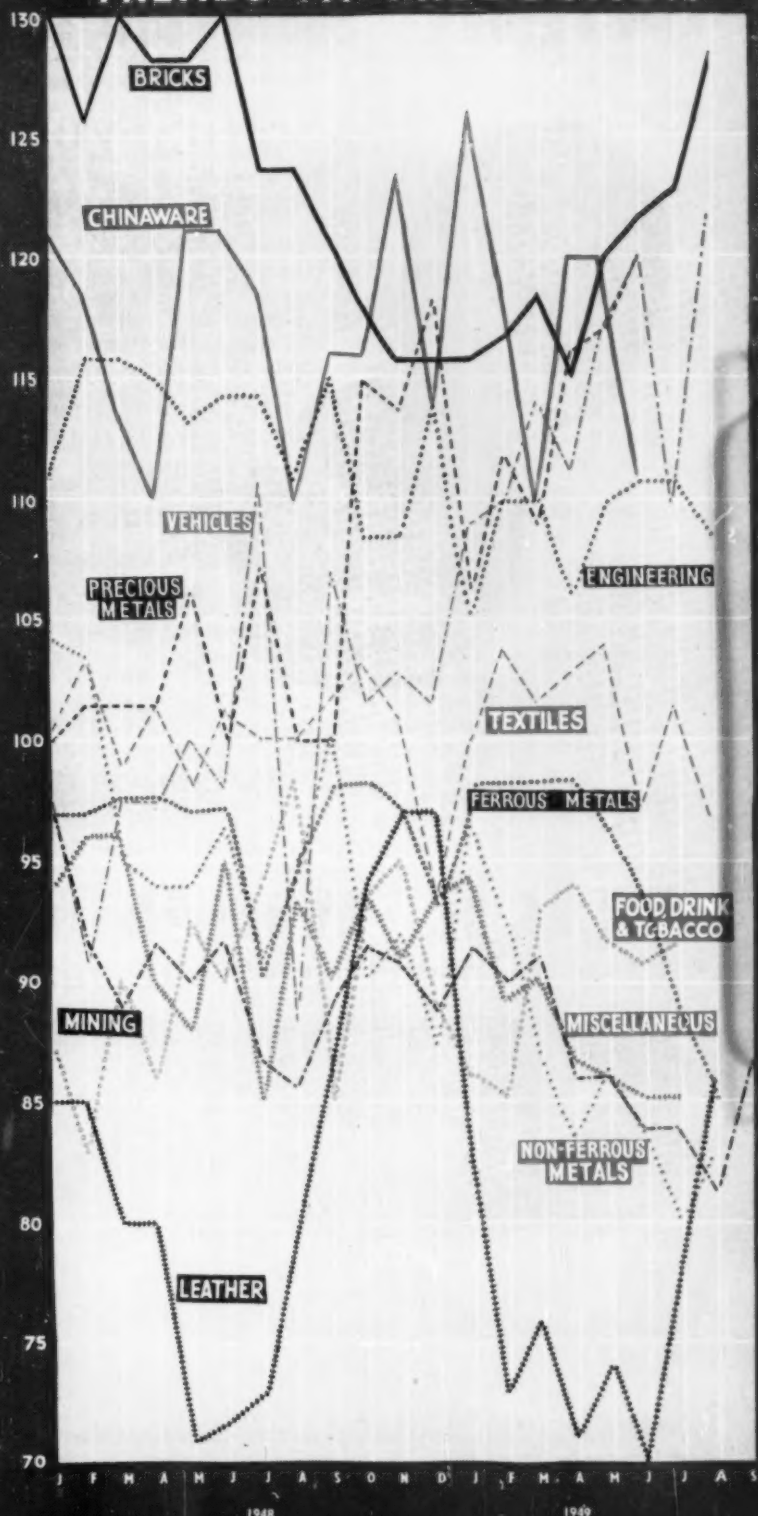
Industrial production, as a whole, is increasing steadily and this general trend tends to mask the relative fluctuations in individual industries. In the chart, the monthly figures for each industry are expressed as a percentage of the relative monthly figures for Total Production. By this means, seasonal trends are eradicated, as is the secular trend of Total Production.

The chart thus shows the relative expansion of the various industries covered by the sub-sections of the Interim Index, after making allowances for expanding Total Production.

Thus the brick industry has shown the greatest relative expansion over the last two years and the leather industry the least.

JANUARY, 1950

TRENDS IN PRODUCTION



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PRODUCT OF BRITISH BRAINS
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added security afforded with the BLICK
WATCHMAN'S PORTABLE CONTROL
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- Strong 8-Day Protected Movement.
- Unlimited Stations.
- Records need not be removed over week-end.
- Patent, Automatic, Spring-loaded Keys.
- Simple, Fool-proof, Accurate, Reliable
- No Ink Ribbons or Carbons.

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**FORD MOTOR CO. LTD., JOSHUA WEDGEWOOD
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Hawthorne investigations are to-day regarded with some reserve by sociologists, but they are generally accepted as showing the importance of satisfactory relations between members of the working group as an incentive to high output. This factor is strikingly marked in a recent investigation in which 300 lads of 18 to 19 were asked to rank eight incentives in their order of importance. Of the total, 29 per cent. put good work-mates first, 23 per cent. security, 22 per cent. prospects, and only 8 per cent. pay. What was even more important was the marked differences between the preferences of lads of different levels of intelligence. The upper intelligence groups sought long-term incentives associated with the work itself, whilst the lower intelligence groups tended to look for shorter term incentives not associated with the work but rather with the compensations for doing it. Thus an incentive scheme that will work with one group will not necessarily work with another, and any attempt to introduce such a scheme must be preceded by a close study of the needs and mentality of the workers affected.

INCENTIVES FOR WHOM?

THE recent interest shown by the Socialists and trade union leaders in incentives has been strictly limited to incentives for wage earners, but Mr. Harold Wilson's announcement that he was considering an incentive scheme whereby exporters to dollar areas should be allowed to retain for their own use up to 10 per cent. of their dollar earnings suggests that the fact that other people are also affected by the size of the returns they get for extra effort is at last penetrating the precincts of Whitehall and Transport House.

This proposal is only one of the incentive measures at present under discussion; the others vary from a special tax allowance to the "one-in-four" plan, under which Americans and Canadians would have an interest in encouraging

British exports by being given a share in the British home market.

None of the plans has so far passed the discussion stage, but the fact that they are being actively canvassed shows that the subject is still very much alive in spite of the official attitude that devaluation should prove sufficient incentive in the British home market.

None of the plans has so far passed the discussion stage, but the fact that they are being actively canvassed shows that the subject is still very much alive in spite of the official attitude that devaluation should prove sufficient incentive in diverting exports to the dollar markets.

One of the earliest suggestions for diverting exports to the dollar area was that exporters should be given a special tax concession. This has met with little support in any quarter.

The Government is against it, and there are objections which from the start prevent its being taken up by industry. So far discrimination has never entered into tax collecting. Once the principle was admitted, it could lead to many undesirable results which would far outweigh any possible advantage.

The Dutch example of allowing an exporter to retain for his own use 10 per cent. of his dollar earnings has found more support among traders, although it has not yet got beyond the stage of being con-

sidered by the Board of Trade.

The operation of such a plan would present difficulties. One is that a big trading company might have no use in Canada or the U.S. for extra dollars. Would the free dollars be made transferable and convertible, and, if so, to whom?

This method would also have the objection that in the popular mind the dollar earnings would be considered as something personal to an exporter. Although there are numerous individual exporters to the dollar area, in the majority of cases the trade is done by companies and the retained dollars would become part of the general funds of the company.

One way by which exporters could convert their free dollars into pounds would be to buy U.S. dollar securities and resell them in London. This would leave the dollars in reserve in the form of U.S. securities and would give the exporter sterling.

A third method about which less has been heard but which has the support of many practical business men is the "one-in-four" plan. Under this scheme if an American agent agrees to import into the U.S. say 100,000 dollars worth of British goods he would be given permission to import into the U.K. goods up to the value of one quarter of this amount—25,000 dollars.





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BUSINESS

The Journal of Management in Industry



This Records System

- Cuts Waste
- Reduces Costs
- Simplifies Policy Decisions

Management policy must be founded on facts provided by past experience. But in the firm that has grown over the years to any considerable size, these facts, the results of decisions taken at many levels over a long period of time, are unco-ordinated and too often result in duplication, waste and complexity.

By classifying all production data by a simple and logical numerical system, three leading firms have been enabled to simplify and standardize their work flow, with reduced costs and higher productivity as a result.

LARGE firms are not born—they grow up through the years from small units, either by an increase in size or by amalgamation with other small units. In the process, they gain all the advantages of large-scale production—bulk buying, mass production, long runs, and the like. But they also run the risk of inefficiencies unknown to the smaller unit.

The small man who runs his own business is never faced with the problem of keeping any elaborate check on the facts concerning his business; he can keep them in his head, or at least on his desk. But as the size of his business increases, more and more responsibility has to be delegated to juniors, who must take certain decisions on their own initiative. For a time, the executive can ensure that he is informed of every decision taken, and thus correlate the activities of his juniors, but eventually a point is reached where it is humanly impossible for a managing director to know of every decision taken by every executive in the firm. One can hardly expect

Lord McGowan or Sir Geoffrey Heyworth to know just when and why one of the laboratories in one of their plants has ordered a gross of a new type of test tube.

This process of delegation of responsibility, though inevitable and desirable within limits, can go too far. With works managers taking completely independent decisions, wide and unnecessary variations in raw materials, designs, tools, components and production techniques creep in, and the economies gained from large-

scale production are slowly frittered away. The process is so slow that it is often overlooked, but it eats insidiously into efficiency, morale and profits.

The maintenance of a satisfactory balance between the claims of departmental responsibility on the one hand and those of standardization, with its inevitable degree of centralized control, on the other is perhaps the key problem of management in the large concern. To solve it, the top executive must first of all have the fullest possible information, in as compact a form as possible, readily and speedily at his command, concerning every aspect of production. Not until this is available can he adjudicate between the conflicting claims.

In a company controlling a number of different factories, each with several production lines, all of which have been operating for many years, the assembly of this information is not a simple task. Many thousands of items, from raw materials to finished sub-assemblies, must be codified.

The normal system is, of course,

FROM PRECEPT TO PRACTICE

In the December, 1949, issue of **BUSINESS**, two important reports were summarized exhorting businessmen to specialize, standardize and simplify. Having published the precepts, **BUSINESS** now presents its readers with the practice. In this and the following two main articles of this issue are the case-histories of five firms that are now already achieving results by these modern methods.

THE BRISCH SYSTEM

REDUCES OVERHEADS by cutting varieties and quantities of stores and stocks, releasing capital tied up in redundant items and saving storage space;

REDUCES PRODUCTION COSTS by eliminating unnecessary variations in components and assemblies, leading to longer runs and hence higher productivity;

REDUCES LABOUR COSTS by cutting out constant reference to plans and drawings and time spent on unnecessary special jobs.

REDUCES MANAGEMENT COSTS by cutting down the data that the executive must consider and giving the facts in a simple manual, always up-to-date, thus eliminating special investigations.

S&C	PRIMARY MATERIALS	1000
Summary of Sub-Classes	Page 1	
1100	Iron, Carbon Steels	
1200	Alloy Steels	
1300	Copper and Copper Alloys	
1400	Non-Ferrous Metals and their Alloys other than Copper and Copper Alloys. Specific Purpose Alloys	
1500		
1600	Fibrous Materials. Timber. Paper Fabrics. Leather.	
1700	Chemicals except Plastics. Painting Materials. Adhesives	
1800	Rubber. Plastics. Glass. Ceramics. Silicates. Abrasives. Powders. Auxiliary Materials	
1900	Special Primary Materials	

to list them by descriptive title, but this immediately raises problems of nomenclature and of the appropriate alphabetical order to be used where the name consists of more than one word. Similar components are only too often known in different workshops by completely different names. Another widely used system is that of numbers, each job or component being given a unique number. The difficulty here is that it is impossible to tell, merely by looking at a number, what the object is that it refers to. The job numbers denote the object to which they refer but do not describe it. They tend, moreover, to become complex and cumbersome. It is recorded that in one firm a particular component was referred to as an SB2457. An inquirer wanted to know what the SB meant, but no one in the factory could tell him. Finally an old retired storekeeper was discovered, who remembered that SB stood for Sam Brooke, the draughtsman who had originally designed the component fifteen years ago and had been dead for ten. The job number, which had once meant something, was as dead as its progenitor.

A third alternative might be found in the Universal Decimal Classification used for classifying books according to subject in most

public libraries. Theoretically, it might be possible to obtain an appropriate number under this system for any item to be found in a factory, but the numbers when found would be so long and complicated as to render the system farcical.

Another less general decimal system has been developed by E. G. Brisch, and is now in operation in a number of leading British firms. The system makes no claim to universality, and is deliberately "tailor-made" for each firm. This means that a Brisch number will probably mean different things to different factories, but this is no disadvantage and enables considerable flexibility and simplicity to be obtained. How many executives are interested in the job numbers used in the factory next door?

In the Brisch system, the classification number (with certain exceptions) is limited to seven figures. All industrial data can be classified into ten very general headings, as follows:


- 0000 Theory, organization, staff, finance.
- 1000 Raw materials.
- 2000 Raw products.
- 3000 Components.
- 4000 Sub-assemblies and assemblies.
- 5000 Tools and implements.


- 6000 Production plant.
- 7000 Grounds, buildings, services, utilities.
- 8000 Scrap, by-products, prevention of waste.
- 9000 Special problems.

Each of these main classes can be sub-divided into nine sub-classes; each sub-class into nine groups; each group into nine series and each series into 999 sector numbers, giving a total possible number of classifications of over 7,250,000—enough for even the largest firm. In practice, of course, no firm will use all the possible combinations. In one plant, class 1000 will be fully expanded and 5000 barely used; in another, the position will be reversed.

The extent to which each class is divided and sub-divided, and the meanings allocated to the various sub-divisions will, of course, vary with the nature of the firm and its processes and products.

The Brisch system completely eliminates the categories " sundries" or "miscellaneous" and fulfils the function of a language in that the symbol evokes suggestion of the object, and *vice versa*. The significance of certain numerical symbols is quickly appreciated and very little conscious effort is required to memorize the code. Even unskilled personnel find the idea easy to pick up.

 WELD STEEL RODS AND WIRE IN STRAIGHT LENGTHS ROUNDS, SQUARES, HEXAGONAL		
		1134
		001/999
SUMMARY OF SECTORS		
SECTOR	DESCRIPTION	REMARKS
001/999		
101/199	Bright Weld Steel to S.E. 970 No. 2	B.M.S.
201/299		
301/399		
401/499		
501/599		
601/699		
701/799		
801/899		
901/999		
I 7-11-1949		

		BRIGHT WELD STEEL ROD To S.E. 970 No. 2 ROUNDS		1134	
SPECIAL METHODS				101/140	
STANDARD				STANDARD	
SCHEDULE OF SECTOR NUMBERS				SCHEDULE OF SECTOR NUMBERS	
SECTOR		SPECIFICATION		SECTOR	
101		.091" dia.		121 1.625" dia.	
102		.125" dia.		122 1.750" dia.	
103				123 2.000" dia.	
104		.187" dia.		124	
105		.218" dia.		125 2.500" dia.	
106		.250" dia.		126 2.750" dia.	
107		.281" dia.		127 3.000" dia.	
108					
109		.375" dia.			
110		.437" dia.			
111		.500" dia.			
112		.562" dia.			
113		.625" dia.			
114		.750" dia.			
115		.875" dia.			
116		1.000" dia.			
117					
118					
119		1.375" dia.			
120		1.500" dia.			
ENDINGS					
I 7-11-1949					

Reproduced by courtesy of G.E.C. (Union Works)

One important aspect of the Brisch system is in the control of purchases and stocks of primary raw materials.

General Electric Co. (Union Works)

A standard Primary Materials Code is now being introduced at the General Electric Company's Union Works, and the three pages from this code reproduced above show the logical process of division involved. Raw materials, of course, come under the heading 1000. The first main division is in regard to the various materials; under 1100, *Iron and Carbon Steel* for instance, come the various categories of forgings and stampings, sections, rods, wire, etc. Each of these sections is again divided into sectors according to material. Then (not reproduced) comes the summary of sectors and finally the schedule of sector numbers.

S. Smith & Sons (England) Ltd.

At S. Smith & Sons (England) Ltd., a tailor-made classification is being devised to cover the many offices and production centres of this organization, and the use of a primary materials code covering

all production material and consumable stores is expected to lead to revision of purchase requisition procedure. Distinction is being made between standard and non-standard materials to the point where redundancy could be eliminated and reduction of stocks to a desired minimum put in hand. This will in turn lead to economies in storage space. The policy of the firm to purchase, where possible, in accordance with British Standards and Specifications will be continued and extended through application of the primary materials code.

Piece-part drawings are being coded on consideration of shape, and it will thus be easier to compare existing and similar components with what might be required for a new assembly. This will enable further reduction in variety to be effected, for it is considered that automatic guidance offered in this respect to the design room is one of the most profitable approaches to simplification and standardization. Operation and scope of punched card methods will also be greatly facilitated. The combination of the Brisch classification and punched card machinery will provide a detailed cross reference (examples of which are given on page 45), which will prove of great assistance in the smooth in-

roduction of the new classification into general use.

English Numbering Machines Ltd.

An outstanding example of the value of the decimal system in classifying components comes from the Enfield works of English Numbering Machines, Ltd., where it has been applied to meet a specific difficulty. The firm manufactures a wide range of counting devices for different purposes. Nearly every customer demands unavoidable minor deviations from the standard model as to direction and source of drive, direction of rotation of counting wheels, number of digits, re-set arrangements, reverse rotation on freewheel or subtraction principle and the means of attachment to the parent assembly.

The possible permutations and combinations of these variables run into thousands, and it was essential that all drawing references and parts lists available to the drawing office and production engineering department should be entirely unambiguous, concise, and of the highest degree of accuracy. A carefully devised system of classification is now affording full satisfaction, and has achieved results in a problem that has defied the research activities of many

In addition to this special application, the system is used throughout the concern on routine work in connection with raw materials, tools, plant, stock records, labour, services, accounts, expense analysis and cost control. In particular, it has made the furnishing of data in connection with the Census of Production simplicity itself.

instructions upon which the immediate future activity of future department's is based. In place of voluminous documents employing component names in full that took a long time to compile, a simple single column sheet of code numbers, illustrated below, is now sufficient. This has reduced pressure on the typing pool, effected a considerable saving in paper, and produced lists that are easier both to prepare and to use.

The system has also been adopted in the factories of A. C. Cossor Ltd., while a preliminary survey has been carried out for Kodak, Ltd., and another is under way for the London Transport Executive.

which is new to Britain, has not yet been installed long enough in any one firm for the full effects of the simplifications to be felt, partly because of the difficulty of measuring the full force of the impact, and partly because of a very natural reluctance on the part of the firms in which it has been applied to reveal what they regard as their trade secrets.

In one firm, however, a preliminary examination of the raw material position showed that 425 types of ferrous strip and 677 types of non-ferrous strip were currently being used in the production of components. The initial classification revealed that some 80 per cent. of all components were made from only three types of strip, the remaining 20 per cent. accounting for the remainder. Confronted with this fact, the management immediately asked the engineering departments whether there was in fact any sound technical reason why those components made from the special strips should not be made from one of these three most popular types. In many cases, the engineering department was able to reply that there really was no overpowering reason for the differentiation, and a switch was made from the special to the standard strip for future production. By these methods, the number of types of ferrous strip was reduced from 425 to 163 and that of non-ferrous strip from 677 to 249—a drop of over 60 per cent. in both cases.

The financial savings involved in such a drastic reduction of stocks held, in terms of interest on locked-up capital and rent for warehouse space may easily be imagined. Productivity was also improved, since machines had to be adjusted each time a new special type of strip was used. With long runs of standard types, these constant and time-wasting adjustments became unnecessary.

On the production side, the increases made possible in produc-

A specimen page from the specification book of English Numbering Machines Ltd.

tivity are even clearer. Another firm found, when the components it was manufacturing were classified by shape, that several departments were making an identical component, each in short runs. Management was ignorant of this fact because each department called its component by a different name. As a result, production was turned over to one machine which supplied all departments and consequently obtained the benefits of long runs.

A more lasting, and hence more important, impact of the system is on the drawing office. When draughtsmen are left to their own initiative, variations in design notoriously proliferate. Even when British Standards only are specified, the range of choice is still extremely wide. With the provision of a handbook of specifications for components and component parts which are already being produced and an instruction to keep to these as far as possible, the draughtsman knows that he must put up an extremely good case in order to obtain permission for a variation, and thus tends to keep automatically within the limits of simplified practice.

Costing, too, becomes simpler and more accurate, since synthetic times can be built up for almost any new model before it leaves the drawing board, based on actual times secured from components already in the specification handbook.

The vital importance of productive efficiency is a matter over which no manufacturer in this country can be in doubt. Any implement which aims at the eradication of this situation warrants the most careful consideration. It is claimed for the Brisch system that it affords a clear and unambiguous identification of all items of plant and equipment in such a manner as to exclude entirely the possibility of misinterpretation.

A cross reference (top), a component assembly list (middle) at Smith's and a monthly production assembly list (bottom), at English Numbering Machines.

JANUARY, 1950

COMPONENTS		LIST OF DRAWINGS IN OLD CODE NUMBER ORDER	NEW CODE
OLD CODE			
P 2121A	LEVER	SWITCHER	1111202
P 2121B	CLIP	W. RING	1111203
P 2121C	CLIP	W. RING	1111204
P 2121D	CLIP	W. RING	1111205
P 2121E	CLIP	W. RING	1111206
P 2121F	CLIP	W. RING	1111207
P 2121G	CLIP	W. RING	1111208
P 2121H	CLIP	W. RING	1111209
P 2121I	CLIP	W. RING	1111210
P 2121J	CLIP	W. RING	1111211
P 2121K	CLIP	W. RING	1111212
P 2121L	CLIP	W. RING	1111213
P 2121M	CLIP	W. RING	1111214
P 2121N	CLIP	W. RING	1111215
P 2121O	CLIP	W. RING	1111216
P 2121P	CLIP	W. RING	1111217
P 2121Q	CLIP	W. RING	1111218
P 2121R	CLIP	W. RING	1111219
P 2121S	CLIP	W. RING	1111220
P 2121T	CLIP	W. RING	1111221
P 2121U	CLIP	W. RING	1111222
P 2121V	CLIP	W. RING	1111223
P 2121W	CLIP	W. RING	1111224
P 2121X	CLIP	W. RING	1111225
P 2121Y	CLIP	W. RING	1111226
P 2121Z	CLIP	W. RING	1111227
P 2122A	CLIP	W. RING	1111228
P 2122B	CLIP	W. RING	1111229
P 2122C	CLIP	W. RING	1111230
P 2122D	CLIP	W. RING	1111231
P 2122E	CLIP	W. RING	1111232
P 2122F	CLIP	W. RING	1111233
P 2122G	CLIP	W. RING	1111234
P 2122H	CLIP	W. RING	1111235
P 2122I	CLIP	W. RING	1111236
P 2122J	CLIP	W. RING	1111237
P 2122K	CLIP	W. RING	1111238
P 2122L	CLIP	W. RING	1111239
P 2122M	CLIP	W. RING	1111240
P 2122N	CLIP	W. RING	1111241
P 2122O	CLIP	W. RING	1111242
P 2122P	CLIP	W. RING	1111243
P 2122Q	CLIP	W. RING	1111244
P 2122R	CLIP	W. RING	1111245
P 2122S	CLIP	W. RING	1111246
P 2122T	CLIP	W. RING	1111247
P 2122U	CLIP	W. RING	1111248
P 2122V	CLIP	W. RING	1111249
P 2122W	CLIP	W. RING	1111250
P 2122X	CLIP	W. RING	1111251
P 2122Y	CLIP	W. RING	1111252
P 2122Z	CLIP	W. RING	1111253
P 2123A	CLIP	W. RING	1111254
P 2123B	CLIP	W. RING	1111255
P 2123C	CLIP	W. RING	1111256
P 2123D	CLIP	W. RING	1111257
P 2123E	CLIP	W. RING	1111258
P 2123F	CLIP	W. RING	1111259
P 2123G	CLIP	W. RING	1111260
P 2123H	CLIP	W. RING	1111261
P 2123I	CLIP	W. RING	1111262
P 2123J	CLIP	W. RING	1111263
P 2123K	CLIP	W. RING	1111264
P 2123L	CLIP	W. RING	1111265
P 2123M	CLIP	W. RING	1111266
P 2123N	CLIP	W. RING	1111267
P 2123O	CLIP	W. RING	1111268
P 2123P	CLIP	W. RING	1111269
P 2123Q	CLIP	W. RING	1111270
P 2123R	CLIP	W. RING	1111271
P 2123S	CLIP	W. RING	1111272
P 2123T	CLIP	W. RING	1111273
P 2123U	CLIP	W. RING	1111274
P 2123V	CLIP	W. RING	1111275
P 2123W	CLIP	W. RING	1111276
P 2123X	CLIP	W. RING	1111277
P 2123Y	CLIP	W. RING	1111278
P 2123Z	CLIP	W. RING	1111279
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Product Standardization Has Meant Exports For 140 Small Firms

By ELIZABETH A. EWING

By standardizing their paint formulations and financing a joint sales organization, 140 firms, many of whom had never exported before, have now broken into markets in 25 countries.

WHEN, in September, 1947, Sir Stafford Cripps gathered employers and Trade Union leaders together at the Central Hall, Westminster, and made his famous "export or die" speech to them, the paint industry started furiously to think about what it could do in the national emergency.

Its members were aware that they belonged to the most individualistic of all industries—one in which 600 firms, employing between them not more than about 28,000 people, traditionally guarded jealously their trade secrets. In true cat-that-walks-alone style they maintained their own particular formulations for products, each of which differed a little from all the others. Many of the 600 were, too, small firms. They were therefore doubly ill-equipped for the broad, knowledgeable approach needed to yoke the paint industry to a world-wide export drive. They had, moreover, three separate employers' federations, so there was

not even single-mindedness there.

The paint industry had, however, already won one signal victory for co-operation when, threatened by the extinction of three-quarters of their member firms by the concentration of industry, they rallied together under Mr. R. B. E. Jackson, chairman and managing director of Silexine Paint Ltd., and a leading personality in the industry. With Mr. Jackson as spokesman, a committee of the industry had made parliamentary history by getting a prayer already on the Statute Book rescinded, when in a delegation they had gone to the Board of Trade, attended by twenty-five M.P.s, put their case before officials there and won the battle for their existence.

Out of this emerged the Paint Manufacturers' and Allied Trades'

Association, with Mr. Jackson as president. As part of its activities, it had a small export section which gave technical advice to member firms, but it operated on too limited a scale to deal with the wider effort called for by Sir Stafford.

Realising that, though some of the bigger firms in the industry had been exporting successfully for over a century, scores of others were too small to be able to gear themselves up individually to study the complexities of export, Mr. Jackson got the idea that, if such small firms were to play their full part in export, they could do so in one way only—by co-operative selling. In practical terms this meant that they would have to agree to sink their individual identities, release their jealously guarded formulations which could not, of course, be patented, and manufacture for export to a common formulation at fixed prices through a joint organization.

At first this seemed to call for a degree of disinterestedness which it would be impossible to attain. Mr. Jackson, however, saw it as the only possible constructive course and refused to give up. On the contrary, in the autumn of 1947 he packed his bag, studied Bradshaw and proceeded himself to stump the country in furtherance of his idea. He went to all the administrative centres of his association—to Bristol, Liverpool,

ASSOCIATED PAINT MANUFACTURERS LTD. A JOINT ORGANIZATION OF 140 PAINT FIRMS

Can produce with comfort over £1,000,000 worth of export paints per annum.

Has 45 agents operating in 50 different countries and is currently shipping to 25 countries.

Has sent ample consignments to nearly 60 countries. Sampling tests of many thousands of pound's worth of Asopan paints are being carried out in many parts of the world.

Is pushing sales in 24 of the principal distributing centres in the United States and is vigorously attacking the Canadian market.

Hull, Birmingham and all over London. He addressed members of the Association everywhere he went. He put the export issue to them. He won over no fewer than 140 firms to his way of thinking—and this was not just 140 out of a possible 600, because the latter total included big and medium firms who were already equipped for export.

In January, 1948, Mr. Jackson had the satisfaction of seeing Associated Paint Manufacturers, a private limited trading company operating under the name Asopan, formed within the paint industry, in order to conduct the export drive. It had the support of the export promotion department of the Board of Trade. It enjoyed the enthusiastic blessing of Mr. Harold Wilson. The guidance of the National Union of Manufacturers was accorded to it. Thereby the paint industry became the first in Britain to pool its resources: it had succeeded in doing what many others had attempted and not achieved.

A board of directors was appointed, one member being selected from each of the areas into which the country is divided by the Paint Manufacturers' and Allied Trades' Association. Mr. J. A. Parsons, of the firm of E. Parsons & Sons, Ltd., of Bristol, was elected chairman. The 140 members agreed to pay a fixed sum per year for three years to provide the necessary finance to launch the scheme.

A series of committees was formed from volunteers among the companies interested. There was a committee to deal with the publicity material to be issued by Asopan, with packaging and the design of labels, with the shade cards. There was a sales policy committee to deal with agents and the Board of Trade. Technical committees started work to determine what were to be the agreed formulations and categories of products. Formulations started coming in and common formulations were decided upon for the main ones.

Premises at 11a Albemarle Street



Mr. J. A. Parsons, Chairman of Asopan, shows Asopan lines to Sir Leonard Browett, K.C.B., C.B.E., of the National Union of Manufacturers.

were acquired as headquarters of Asopan, and a small paid staff of five, with Mr. D. Ware as general manager, started upon the task of co-ordinating the members' activities and preparing the necessary literature, colour charts and samples to air mail to the agents who were being appointed all over the world. All these five staff were functionally interchangeable, and by April, 1948, their work, in conjunction with that of the voluntary committees, had got far enough for Asopan to be incorporated as a trading company.

How Asopan Organizes Its Export Business

In this capacity it holds the formulations which its technical committees have agreed make the best use of the available materials and produce the best quality goods. It supplies samples and colour charts and information about these to a network of agents all over the world who keep in touch with markets and watch for new opportunities. Further such agents are continually being appointed.

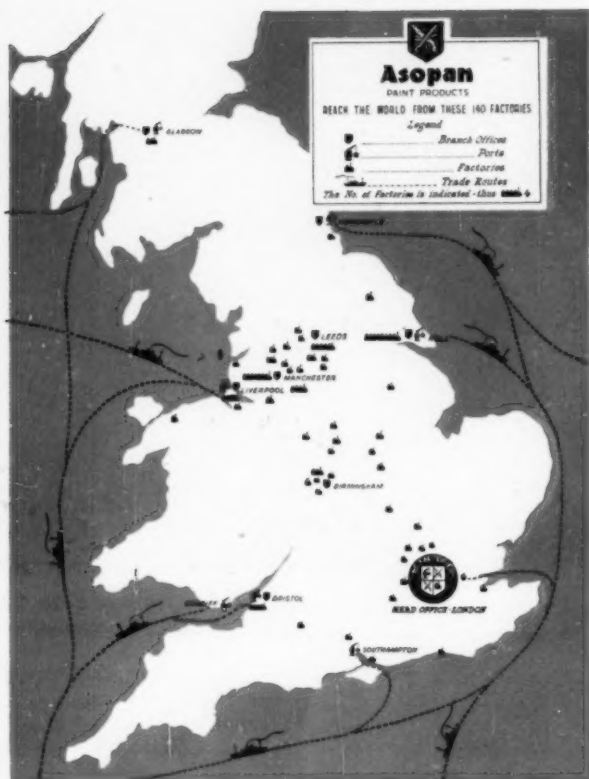
Orders are sent by agents and

prospective customers to Asopan, where a list of members and of the products in which such members specialise is kept. Orders are allocated in rotation by the general manager of Asopan.

To safeguard the impartiality of the organization it was laid down that the directors should have no say at all in the allocation of orders and, in addition, that until every member of the organization had either received an order or had the opportunity of accepting one, no firm on the directorate should be allowed to quote at all.

Members receive a monthly report of progress, which states the number of members who have received orders, the number of samples sent out, the number of members who have executed orders and the number who have been offered and have refused orders.

All orders secured by Asopan are supplied by members at gate cost, the supplier being thereby reimbursed for material, labour, etc., but the profit being made by Asopan, to be available for development and for distribution to the members of the trading company. It is, therefore, the aim of Asopan



The 140 firms incorporated in Asopan are widely spread throughout England and Wales.

to be able eventually to stand on its feet and for members not to be asked for any subscription but to participate in the profits gained from exports.

It is a logical deduction from the structure of Asopan that members carrying on export business by their own efforts should continue to do so, such activities being treated as quite separate from orders obtained through Asopan. This is particularly important because the organization has in it many experienced people who have been and still are exporting their own products. Their presence gives strength and experience to the smaller firms, but while they quite legitimately may have business handed on to them by Asopan, it would be unreasonable to expect them to put everything into the pool.

Looking back over the past two years, Mr. Jackson regards the initial agreement to pool formulations and get together as a big constructive industrial event; in support of this belief he has the fact that various other industries are showing keen interest in Asopan and are enquiring of it how it got to work.

He realizes, too, that in addition to the prime gesture which brought Asopan into existence, it took considerable voluntary effort and expenditure of time to make it work—effort in handing in formulations, in the “vetting” of them by technical experts, in the selection and compilation of the best possible ones for presentation as Asopan’s own products. There was work, and also expense, involved in getting such products known overseas. The necessary use of air

mail for samples as well as data and other literature, was a costly drag on the infant Asopan.

But from it all something of practical value to the members as well as to the volume of British exports is definitely emerging. Business is growing, and the results reviewed at the recent meeting were regarded as very gratifying.

Asopan Looks at Its Future Prospects

Whether the paint industry will, even with Asopan, reach its export target, is less certain. Import restrictions set up by many countries are, in this sphere as in others, hampering development. In America, British decorative paints were before the war recognized as being generally superior to American, but raw material difficulties here during the war gave America the lead, and to persuade her at this juncture to change over to British products is difficult. Up to recently our prices were out of line with dollar-country requirements, but now this is improved. All American quotations from Asopan, moreover, go out in delivered dollar prices. A big drive to capture Canadian business is also being launched.

Business has almost doubled since, reviewing progress at the first annual luncheon of Asopan in September, 1949, Mr. J. A. Parsons said:

“We were assured from many countries that it would be three years before we could expect to trade, but our turnover at the moment is quite considerable. We have business in thirteen countries which cover practically all the countries with whom it is possible to do business at present. We have a further very considerable amount of orders which run into big money awaiting import licences, from a further eight countries. I do think that this is a magnificent effort, and there is no doubt that our sales could have been greatly increased if all bi-lateral agreements could have had paint products included in them.”



By A. K. ASTBURY

Concentration on Essentials Cuts Production Costs

Extruded metal tubes are finding many and diverse uses in engineering shops to-day, and any firm that tried to utilize all their potentialities would court disaster. By specializing in a single market — that of motor bodies — and developing a simplified construction technique, a new firm, Comjoint Ltd., with only part-time directors, has sold £100,000 of exports in eighteen months. The system uses only three components and can be carried out by unskilled labour.

THE construction of commercial motor vehicle bodies is normally regarded as a field in which specialization and standardization is particularly difficult. The average order received is for one or two models only and the space and weight needs of different customers vary widely. Moreover, each customer demands that his motor body should be distinctive, i.e., should differ from those used by his competitors.

The result is usually a "custom-built" body designed for and constructed by skilled hand labour, and is naturally, owing to the high labour costs involved, an expensive item.

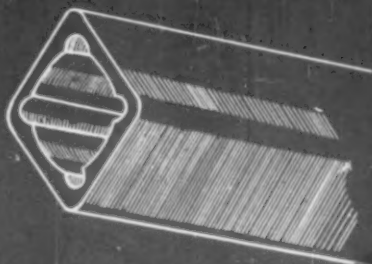
By specializing in a single form of patented unit assembly, specifically designed so that unskilled or semi-skilled labour can be used, a new firm, Comjoint, Ltd., has cut the costs of motor body construction substantially without sacrific-

ing the wide variety of forms necessary to meet consumer demand.

The foundation of all Comjoint products is the square extruded aluminium tube, with rounded outside edges and strengthened by a form of ribbing, or corrugation, on the inside. This tube is a development of an earlier type which was, in fact, two tubes—a round one inside a square one. The tubes are married by split couplings of special aluminium alloy, which fit into the open ends of the tube and are forced apart, and thus wedged in, by taper pins. These are driven between the split coupling pegs and through the two sides of the tube. The corrugations give the inside of the tube a circular surface against which the circular pegs of the coupling fit, and the pressure caused by the taper pin keeps the couplings rigidly in place.

To the framework of tubing thus

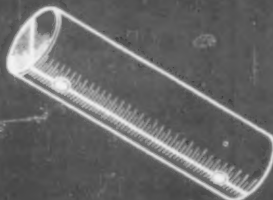
THIS NEW TECHNIQUE
EMPLOYS ONLY THREE
COMPONENTS



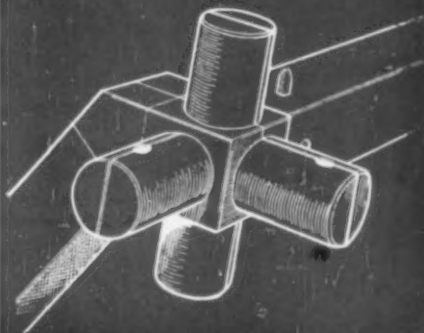
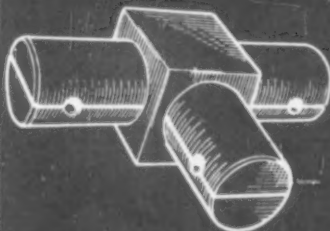
An extruded light alloy tube,



a taper pin,



and split couplings
with two or more pegs.



STANDARDIZATION DOES NOT MEAN REGIMENTATION



A few of the wide variety of motor bodies produced by the specialized technique . .

formed are riveted aluminium sheets by "pop" rivets. These rivets, made by Geo. Tucker Eyelet Co. Ltd., of Birmingham, and widely used in aircraft construction during the war, are hollow, and the free end of the rivet is flattened by pulling what looks like a nail through the hollow centre of the rivet. The head of the nail spreads out the free end of the rivet and then breaks off. And these rivets, incidentally, can be drilled out in much the same time as is taken to fix them, which gives a considerable saving of time in repair work.

Building Up the Vehicle Bodies

The tubing, which can be bent to any shape required, is cut to length and assembled with the couplings. The panels are lapped at their couplings after first being treated with non-hardening liquid waterproofing material, and then riveted to the frame. In the case of bodies for commercial vehicles, strips of corrugated metal battening are riveted to the inside of the frame to protect the aluminium panels.

Bodies are prefabricated in section and then assembled as the finished article.

So much for the basic method of construction. To what uses is it being put by Comjoint Ltd?

One product in which the company has specialized is known as a personnel carrier—in fact an oversize bus. Oil companies in the Middle East often have to carry large numbers of workers comparatively short distances; and one, needing a vehicle for this purpose, ordered from Comjoint a vehicle which could accommodate up to 88 passengers. The personnel carrier, of a total length of 47 feet, and consisting of a tractor and 36 feet trailer, was the result. A number of these vehicles have since been shipped to the Lebanon.

I recently examined one of these carriers shortly before it was exported. This aluminium monster shone in the sun in spite of its protective covering of a lanolin compound which protects it against sea air and water. It had sliding windows of transparent plastic, a special generator for lighting and ventilating, and its metal interior shone like a mirror.

With the first personnel carrier shipped by Comjoint to the Middle East went 12 container bodies. These were in effect commercial vehicle bodies fitted with sling gear so that they could be craned on to lorries when they arrived. They were thus able to serve a dual purpose. On their outward journey they were filled with furniture, and thus became giant packing cases; and on arrival they could be used as commercial vehicle bodies, stores and even temporary shelters.

Similar containers are to be used as temporary dwellings for oil company staff. One prototype container has already been sent out fitted with windows, ventilating equipment, two bunks, a wardrobe, two wash basins, and cupboards. It is wired for lighting and piped for water.

The New Technique Has Many Uses

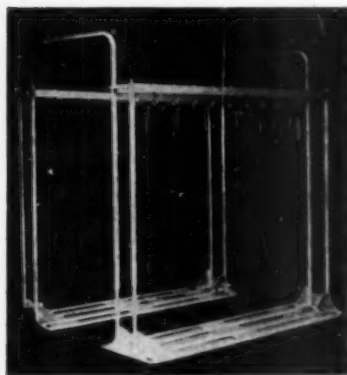
Among orders on hand at the moment is one for 35 drivers' cabs for road petrol or oil tankers. The company is also making driving cabs for giant tractors which are being made in Britain for carrying

heavy loads of oil piping in the Middle East. An order for 13 lorries for the Regent Oil Co. has just been completed, a mail and passenger carrier for Rhodesia—and a prototype greenhouse. Ten more personnel carriers are also under construction at the moment.

For carrying fresh food, and possibly frozen food, across the desert, where temperatures up to 180 degrees in the sun must be expected, Comjoint has made a body lined with insulating material, with connections of non-heat-conducting material between inner and outer shells.

Only two per cent. of Comjoint's production has gone into the home market. The firm's export markets include the countries of the Middle East, Rhodesia, and South America, and there are prospects of expansion in Australia and South Africa.

Possible uses for this new construction technique are innumerable, and judging by inquiries received by the company, potential customers are as eager as Comjoint to exploit it. Here are a few of the uses to which, correspondents have suggested, the technique might be applied: to the manufacture of portable buildings for the Festival of Britain; mobile cinemas for the Dutch East Indies; overhead ropeway pylons for South Africa; tray racks for drying tobacco leaves in Rhodesia; and even African native huts.



which has also been used for such items as this cloakroom fitting ...

Comjoint's technique is standardization and specialization without mass production. At a time when many metal bodies are designed with a considerable number of parts, Comjoint has got down to the absolute minimum with its three basic components of tube, sheet, and coupling. It has always been the company's policy to specialize and standardize to the limit. Tubing is bought already extruded, couplings already gravity die cast; with these, and aluminium sheet, Comjoint can build motor bodies (to say nothing of other products) to any dimensions and practically any shape and line without departing from an absolute standardization of components.

Cutting Vehicle Repair Costs

The advantages of such specialization are obvious. Stocks of spare parts can be cut to a minimum and a damaged body corrected by taking out struts or sheets and replacing them from stock. The company, regarding as inevitable damage of some kind at some time to all commercial vehicle bodies, has purposely designed them so that they may be repaired quickly, with unskilled labour, from stock parts. The company further claims that any repair can be done by anyone of normal intelligence with the following tools: two spanners, a pair of "snips," a drill, a hand riveting tool, and a two-ounce hammer.

Speed in repair work is a natural result of such specialization. One vehicle which came to Comjoint for repair one Thursday, after being involved in a road smash, was back repaired with the owners on the Saturday. Such time saving is an essential feature of the technique. And the fact that the aluminium alloy from which the components are made is so light gives an added advantage where parts have to be flown or transported across undeveloped country.

Yet the manufacturers are convinced that there is nothing weak about their final construction, for 1,500 bodies built by this technique

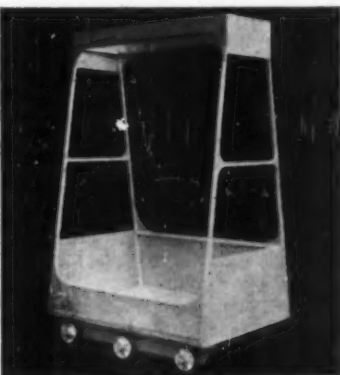
have given satisfactory service at home and passed the most stringent of tests in undeveloped areas.

A vehicle body so constructed, of 1,000 cubic feet capacity, and fitted to a commercial chassis, was recently being loaded for export when it fell from slings at the docks 25 feet into the hold of a vessel. The chassis had to be returned for repair, but scratches and superficial damage apart, the aluminium framework, and in fact the complete body, were intact.

The firm was founded a little over eighteen months ago, on the strength of one order from a Middle East oil company. Since then the company's business has grown by leaps and bounds.

It has advertised neither its manufacturing technique nor its finished products, nor have its directors, Mr. R. H. Faro, O.B.E., M.I.M.E., M.Inst.T., the holder of the patents on which the technique is based, and Mr. W. F. Crane, M.Inst.M.E., of Cranes (Dereham) Ltd., been able to devote the whole of their time to its affairs. Yet during its eighteen months' life it has carried out £100,000 worth of export orders amounting to 98 per cent. of its production.

The enterprise and enthusiasm of its two directors apart, what has been responsible for the success of this new construction company? The answer may be found in two words: standardization and specialization.



and this bacon trolley for internal transport in cold storage rooms.

Mr. ALFRED WHITTLE, F.C.A.

Chairman, The Wall Paper Manufacturers Ltd.

IN common with all other manufacturers we are very perturbed about the future of British industry generally. It is possible for a manufacturer to bring down certain elements in his costs which are out of line, but there is, however, a constantly growing proportion of costs which he cannot control as all kinds of indirect taxation creep in. The pronouncements of those responsible for the government of our country almost force us to believe that we may not look forward to any relief in taxation. Another particularly disturbing feature concerns those industries where acute shortage of raw materials has caused workpeople to hold back their best efforts for fear of seeing the available raw materials disappear. The test will come when abundant supplies of all raw materials make it possible for workpeople to go all out in a common effort to bring down the cost per unit of output.



Mr. R. M. LEE

Chairman, Calico Printers' Association Ltd.

THE maintenance of regularity in raw cotton supplies has an important bearing on the successful operation of labour deployment, since variations are capable of disturbing the work load upon which the principle of deployment rests. The development and full adoption of the scientific deployment of labour, so vital to our economic welfare, can only be successful provided the workers on the machines have confidence in the system adopted and in the management. If, in consequence of variations in the quality of supplies at any stage of manufacture, there is a necessity for constant change in workers' machine quota, the achievement of that confidence may be prevented. The need for maximum deployment, with a reasonable labour load for each operative, is urgent in the race to achieve the utmost production and economy.



Mr. BERNARD LOWTHROP

Chairman, Office Machinery Ltd.

THE allocation of steel is made from paper records and applications. The number of participants runs into hundreds and embraces a surprising number of quite large firms. The result is fantastic, although centrally it might appear not unfair. Legitimate manufacturers, with first class equipment and craftsmen, have to share allocation with all and sundry, including firms in development areas and many others not previously in the business at all. Allotments are made to firms already enjoying an allocation of steel for shipbuilding, kitchenware or other priority purposes. Many manufacturers receive special allocations for Government contracts for direct supply to Ministries, such as the Post Office, The Navy, Ministry of Insurance, etc. These firms use their plant and steel, quite logically of course, for the production of direct supply to the Government and nationalised industries and the general trade loses not only the business but the steel.



CALLING

of Business Men

Mr. ASHLEY S. WARD

Chairman, Thos. W. Ward Ltd.



IT is fashionable in certain quarters to-day to scoff at the profit motive. Profit is apparently regarded as something which is unseemly, instead of its being the direct result of effort, foresight, efficiency and courage. It seems to me that the making and judicious distribution of profit is a vital necessity to national survival, and indeed prosperity and a higher standard of living. There is overwhelming evidence that this country requires an incentive to harder work (which is the only basis of real prosperity) with as little political meddling as possible. To work harder a man must be given some positive reward for his labour. You cannot appeal to him solely on idealistic grounds, as it appears the Government is trying to do. Good management knows that men and women are not in business for purely altruistic motives.

Mr. J. F. BYRNE

Chairman, Smith's Stamping Works (Coventry) Ltd.



WE hear a great deal to-day of the profit motive and it is frequently preached even by those in high authority that there is something immoral in making or retaining profits. It is, and most rightly should be, the aim of everybody, both employers and employees, to make profits. Higher profits are the result of efficiency, and efficient management is entitled to a higher profit, as also greater efficiency on the part of a workman gives him a higher profit for his labour. If the profit motive ceased to exist incentive, both for employer and employee, would be destroyed. Furthermore, profits are the best security for employment; there is no security for employment with a firm or company which does not retain an adequate profit. Sooner or later that concern will fail and so will its ability to give employment.

Sir EUSTACE MISSENDEN

Chairman, Railway Executive



GIVEN economic stability and reasonable financial resources, a bold electrification policy, coupled with judicious use of Diesel traction, and backed by faith in the industry, could, as nothing else, bring about the rehabilitation of British Railways.

The steam locomotive is inefficient and an extravagant user of coal. It is expensive to operate, service and maintain, and its operating characteristics, and the dirt and smell, prevent it from giving the quality of service expected by the public and which the railways must give if they are to survive. The advantages of the steam locomotive are that it is simple to construct, is robust in service, has a long life, and a comparatively low first cost. But from the operating point of view the steam locomotive has certain serious limitations, and the practical alternative is either Diesel or electric traction.

Private Enterprise Weds Public Welfare

By LEICESTER COTTON

THE argument between proponents of nationalization and of private industry rages interminably until it is in danger of becoming a bore. The whole controversy is carried on in terms of black or white, and it occurs to few that one possible solution might be an amalgam of the best of both worlds.

Such a suggestion might seem hopelessly impracticable. But, in point of fact, one of the outstanding developments in Britain's economy—Power Jets, Ltd.—is just such a happy hybrid: The firm functions exactly in the same form as any private limited company. Its officers are responsible solely to the directors; it pays income tax in the normal manner; it presents the orthodox balance sheet and has an eye to economics as would any commercial firm. But the directors are appointed by the Minister of Supply, who is, in effect, the responsible share holder. And dividends go into the public purse.

Just recently the Boeing Airplane Co., of Seattle, tried to explain why America lags behind Britain in the development of jet air-liners. It declared that Government financial aid would be required if America was to catch and pass the "subsidized British aircraft industry in its bid for domination of the future jet transport field." The Boeing Co., has, of course, completely missed the point. As far as "subsidies" are concerned, the United States benefits just as much as Britain, or any other country from Government contract work. The success of Britain's power jets concern is

due, rather, to the closest integration of effort between scientists of private enterprise and Government Research establishments maintained by the Ministry of Supply. Whether such co-ordination could be achieved in other industries is a moot point; in this case it is certainly a masterpiece of dual effort.

To-day the enterprise is a vast one, but the man from whom the whole thing stemmed has not been overlooked or pushed aside by officialdom. He is an honoured citizen, he has been knighted and awarded £10,000 by the Royal Commission on Awards to Inventors. Sir Frank Whittle's name, in fact, is practically a synonym throughout the world to-day for jet-engine.

Birth of the Jet

The amazing expansion and drive of this national business have a lot in common with the revolutionary power of the prototype which Whittle evolved. But, just as the first experimental engine built from his designs in 1937 has been streamlined and embodied advances which to-day make that 12-year-old engine a museum piece, so Power Jets (Research and Development) Ltd., as it is now called, has taken in other experts and become as highly efficient an industrial concern as any to be found in Britain. It is unquestionably the world leader in gas turbine technology.

No invention, or for that matter no enterprise, ever springs fully armed like Pallas Athene from one man's brain. All such processes

are clouded in origin and long in gestation. But, as far back as it is possible to trace the idea, it can be said that the first patent for a gas turbine was taken out by an Englishman, John Barber, in 1791. Theoretically his project was sound enough, but he was up against formidable constructional problems and the idea lapsed. It was not until eighty years later that the first actual hot-air turbine was built by a German, Dr. Stolze, with an axial-flow compressor and a multi-stage turbine mounted on the same shaft. Though the idea, again, was sound, its efficiency, in practice, was negligible. A series of further experiments, including those of Sir Charles Parsons, brings us well into the present century. But failure after failure to present anything practical made most designers abandon the scheme.

But Whittle persisted doggedly in his belief and, luckily, in 1930, met a man but for whom the story of Power Jets would possibly have had no beginning. He was Mr. Patrick Johnson, then a pilot, during the war a "back-room boffin" and now Managing Director of the Company. At the time Johnson was not only a pilot, but also, happily, a patents lawyer. It was he who advised Whittle to apply for his first patent to use the gas turbine for jet propulsion as far back as January, 1930. It was he, too, who, in consultation with Whittle, drew up the first specifications. With his ambivalent knowledge, both of "kites" and how to fly them and of the legal intricacies of patents, Johnson is as responsible

A happy hybrid of public and private enterprise, the firm of Power Jets (Research & Development) Ltd. has put and is keeping Britain in the lead in the development of gas turbine propulsion.

as, if not more responsible than, anyone concerned in the industry to-day for Britain's title to supremacy.

But it was seven years before Whittle could entice either the Air Ministry or private firms to take the slightest interest. The original patent lapsed through failure to pay the renewal fee.

But during the time when Whittle, as an engineer officer, was studying at Cambridge—that was in 1935—two ex-R.A.F. officers, R. D. Williams and J. C. B. Tinling, secured for him the backing of a firm of investment partners, O. T. Falk and Partners. Power Jets, Ltd., was formed in March, 1936, and in just over a year an order for the first experimental engine was placed with the British Thomson-Houston Co. Ltd. Help on the problem of combustion was given

Sir
Frank Whittle,
C.B., C.B.E.,
F.R.S., Hon.
M. I. Mech. E.,
F.R.Ae.S.



by Laidlaw, Drew & Co., and Whittle perfected the prototype early in 1937. In April it was tested—and worked!

Power Jets thereupon moved to the old B.T.-H. foundry at Lutterworth, and here was where the reputedly stony heart of officialdom was finally stirred. Whittle's patient faith had been vindicated; Power Jets secured a contract from the Air Ministry for research. In 1939 they placed a contract for a flight engine and another with the Gloster Company for an experimental plane. A curtain of official secrecy, of course, had descended on all activities, and the public heard only rumours of the strange new method of propulsion until early in 1944, by which time British fighters had reached speeds of more than 500 m.p.h.

In 1941 the Government were instrumental, at the urgent request of General Arnold, of the U.S.A.A.F., in sending a team of Power Jets' engineers, one of the first engines (which could ill be spared) and a set of drawings by air to America, where they started development of gas turbines, of which the Allison J33 and Pratt and Whitney "Turbowasp" units are modern examples.

It was not until 1944, however, that the venture really became a joint Government-cum-Private Enterprise concern. All along John-

son had protected the work of the research teams by patents, and when the Government acquired the company, assets secured for the nation included a substantial patent holding, estimated to be worth a great deal of money. The company became Power Jets (Research & Development) Ltd., and to it was joined the Turbine Division of the Royal Aircraft Establishment.

By the end of the war the Government realised that a responsibility had been shouldered that was far beyond the realms of even a nationally-owned aircraft company. About £30 millions of public money had been spent on gas turbines and an immense fund of knowledge had accrued. It was, therefore, decided that the special workshops, laboratories and test-houses at Whetstone should become a Government Research Establishment. As the National Gas Turbine Establishment, it would be responsible to the Ministry of Supply for all aspects of gas turbine research in all fields.

The outstanding problem was that of Power Jets patents. Thanks to Patrick Johnson the company, even then, had some 1,700 patents and applications in some 15 countries. To-day there are more than 2,000 and the number is still rapidly increasing.

To quote the firm's assistant



Mr. Patrick Johnson,
A.F.C., A.R.Ae.S.

manager, Mrs. Holloway: "We believe that to have such a store of knowledge so consistently acquired and concentrated in one place is of tremendous value."

The Government had never before faced a patents proposition of such magnitude, the earning power of which could be estimated in millions; it was clearly too big to be handled in the routine way by a Government Department.

Still Private Company

It was thus decided that Power Jets (Research & Development) Ltd., should remain in being with the structure of a private company, operating under a Board of Directors along orthodox commercial lines, with the duty of holding and using to the best advantage that storehouse of patents.

Patrick Johnson was the obvious choice of General Manager, and in July, 1946, he took over. Appointed by the Minister of Supply, the Directors include the Principal Patents and Awards Officer of the Ministry, whose branch deals with patents which continue to be applied for to cover the current work of the National Gas Turbine Establishment. These patents are added to Power Jets' stock.

"The objectives of the Company," says Mr. Johnson, "are essentially different from those of private patentees, in that the primary aim is to ensure the liberation of useful inventions with modest financial returns, rather than to secure the maximum profit by restraint of their use."

The School of Gas Turbine Technology is the only one of its kind in the world. Owned and operated by Power Jets (R. & D.) Ltd., it aims to give students who come from all parts of the world, an insight into current British practice. The school is a non-profit earning foundation and the fees are just sufficient to cover running costs. There is no age limit for "students"; a junior designer of 25 may well be a member of the same class as a University Professor more than twice his age.

How Dunlops Train

By PHILIP F. DYER

Faced with the dual problems of high labour turnover among juniors and the inevitable disruption caused by National Service training, Dunlops have introduced two training plans to improve morale among their juniors.

Initiation Training gives every new entrant a wider insight into the work of the firm and his own part in it.

Planned Employment gives boys on the office side a wider background and an incentive to return to the firm after completion of their eighteen months' national service.

THE decline in the number of pupils leaving school, the rise in the school leaving age and the demands of National Service have, in the last few years, caused something of a revolution in the juvenile labour market. To-day it is difficult to attract new recruits and, even when they have been obtained, difficult to keep them.

As a consequence, management is diverting more attention to welfare and training problems affecting the adolescent and an important lead in this direction has recently been given by the Dunlop Rubber Company Ltd. The company have worked out and adopted two schemes—Initiation Training and Planned Employment—which, while administratively separate, have the same end in view, the improvement of the morale of juvenile workers.

Dunlops have twenty factories and over fifty Sales Depots and Sub-Depots in Britain.

It has always been the policy of the company that the various Divisions and Associated Companies should be as autonomous as possible, and although many of the education and training schemes are elaborated by the Chief Training Officer, Mr. C. D. Law, the ultimate responsibility for their execution rests with the Head of each Division, through his Divisional Training Officer. Each Divisional Head is, however, free within the wide limits of policy laid down by the Board of Direc-

tors to accept, reject, or amend any particular scheme.

Thus whilst any one of such schemes may be centrally planned and its broad principles accepted by all Divisions, the detail methods of working it may vary according to local conditions and requirements.

Initiation Training, for instance, was adopted by Fort Dunlop twelve months ago and has since been adopted at three other plants, but has not been and will not be put into operation at certain others. The purpose of Initiation Training is to break down the natural feeling of isolation which every new entrant into industry must feel, and to enable him or her to gain the feeling of being an integral part of the group making up the firm.

When Mr. Law first worked out the scheme, he considered that, ideally, a short initiation course should be given to every new entrant to the firm starting on the day that they joined the firm. This, however, proved impracticable. Training must be given in groups and new entrants arrive as individuals and start work on different dates. In the case of a small plant it may be a considerable time before sufficient new entrants are forthcoming to enable a group to be formed.

As a result, the position now is that the new entrant arrives and is put on to a job in the normal manner. It is not until some time later,

Their Juniors — and Keep Them

when a dozen or so new entrants have arrived, that the initiation course is begun.

Other factors also affect the timing of the initiation training scheme. It was decided that courses would have to be taken during the school holidays, since juveniles were already absent for one day a week during term time, either at Dunlop's own day continuation school or at a technical school, and any further absence would make serious inroads into their work.

The aim of the course is social rather than vocational and is aimed at giving the entrants a clearer idea of the society of which they have become members and of their place in that society. In the past, very little, if anything, was done to make the juvenile aware of the scope and import of his work, so that there was never much sense of responsibility, loyalty to the firm or initiative shown by the juveniles, who tended to drift away if and when the opportunity arose.

The initiation course is given to all new entrants, whether on the production or office side. It consists of a series of seven talks given by members of the firm and spread over a period ranging from one to three weeks. All entrants, girls and boys, from factory and office, attend the lectures together and it has been found that this mixing is in itself something of an education. The subjects of the talks are:

- (1) The history and traditions of the firm.
- (2) The raw materials used by the firm.
- (3) The various products produced by the firm.
- (4) Training facilities available to the entrants.
- (5) Social and welfare facilities available.
- (6) Health and hygiene and
- (7) A survey of the company's present and future position and prospects.

The talks are given by the appropriate officer of the company, e.g.,

that on raw materials is given by the purchasing officer, that on training facilities by the training officer, and that on health by the works doctor. In some cases the health talk is given separately to girls and boys. The final talk on the company's present and future position and prospects is always given by the most senior executive of the company available for the purpose. As a result of a unanimous and spontaneous request of the members of the first training course, the programme has now been enlarged to include a conducted tour of the factory.

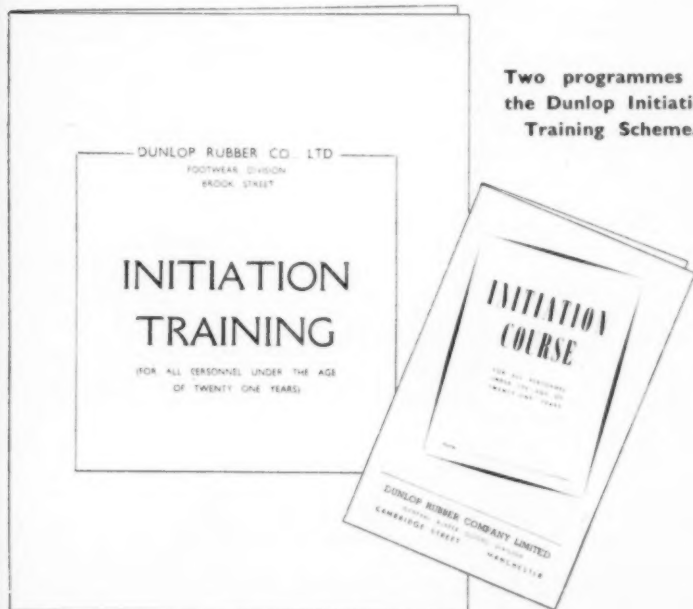
After the course is completed, the entrants return to their normal work with a keener interest in their job because they are able to fit it into the activities of the firm as a whole.

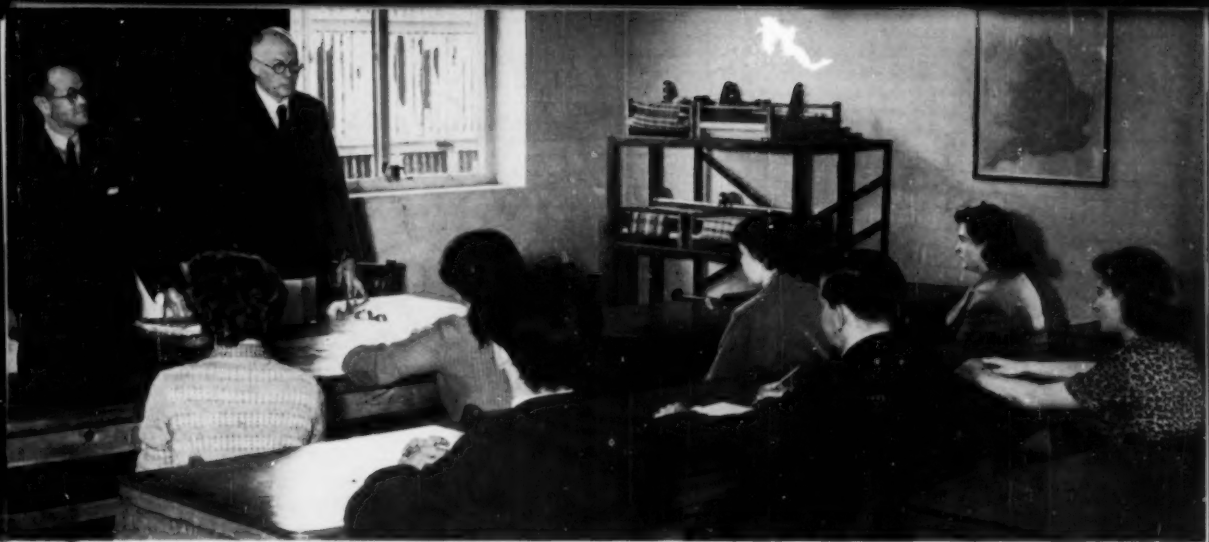
The Planned Employment Scheme is both wider and narrower in scope than the Initiation Training. Its effects on the trainee are of considerably greater importance, but on the other hand, it is limited to boys in the office side of the business.

Planned Employment was worked out to counter the problems caused by the effect of call-up for National Service. Dunlop's found (and their experience can surely be duplicated by many other firms) that lads joining the company straight from school were unable to see any further than the date of their call-up. As a result, they tended to regard the two years or so before they reached call-up as a mere interregnum to be got through as easily as possible, while they regarded what would happen after they had finished their service as too far away to be worth considering. The net result of this attitude was slackness in work before call-up and a tendency to go into other employment on release.

Following the same purpose of fostering identification with the firm, the Planned Employment

Two programmes of the Dunlop Initiation Training Scheme.





The most important official available gives an account of the current situation and future prospects of the firm to an Initiation Training class.

scheme was introduced to give lads a wider background of experience and a keener interest in their own work and the work of the company. As has been said, the scheme is limited to office staff, since most of the lads on the production side are already covered by apprenticeship schemes and can, if necessary, obtain deferment to complete those schemes.

Under the Planned Employment scheme, boys are taken on in the normal manner and put on to a suitable job. After a period of six or twelve months, depending on the age at which the boy entered the firm, the local training officer and the local departmental executive review the boy's history and record and decide whether he will be able to benefit from the Planned Employment scheme. About 70 per cent. of the boys are accepted as being suitable, but the decision as to whether a boy has been accepted or not is not made public. In the nature of things, the boys generally have a fairly good opinion as to who has not been accepted, but this is purely unofficial.

When a boy has been accepted he is moved on to another department in the plant and during the period between this decision and his call-up may have three or four such moves, spending some months

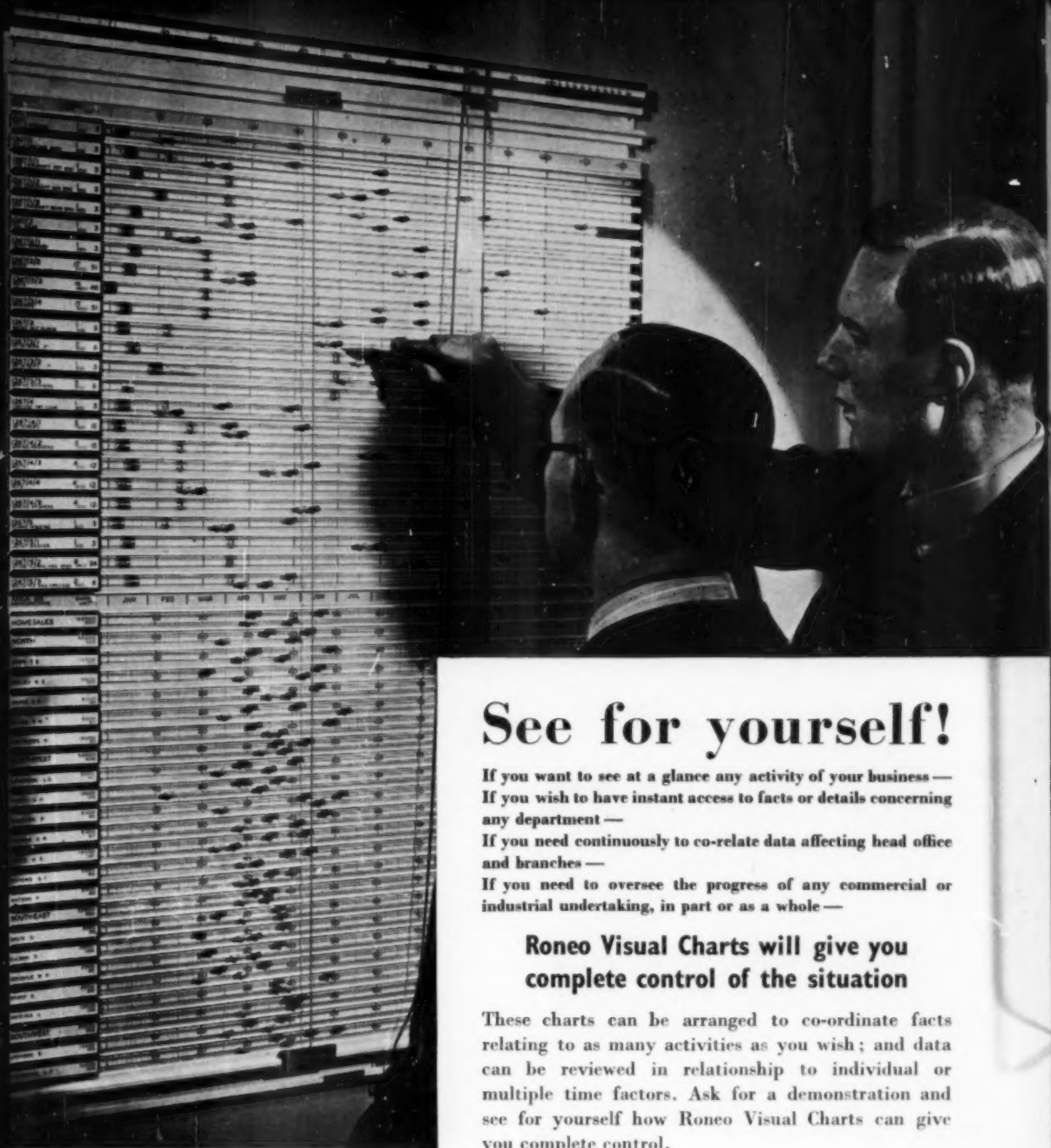
on each of several jobs within the office which he first joined. The timing and number of these jobs will naturally vary very much according to the department to which the lad is attached and the programme must necessarily, therefore, be extremely flexible. An ordinary sales depot will have service, stores, dispatch, general, cash and delivery departments, while a tyre sales divisional office will have supplies, ledger, statistical and service departments. By the time a lad has been through three or four of these departments, he will have a pretty fair idea of the work of the office as a whole and of the prospects which it can offer him. At the same time, management will have a greater variety of information and opinion as to his capabilities.

Going Up to Head Office

In the third stage of Planned Employment, immediately prior to call-up, the lad is transferred to the local head office for an intensive initiation course, covering anything up to two months. During this period, he is introduced to the working of the various departments at head office which deal with the departments in his own

branch office and thus obtains an even wider knowledge and experience of the activities of the company. Not all the boys accepted for Planned Employment reach this third stage, since practical difficulties make an absence of months impossible in many cases. This final course is completed some weeks before the actual call-up and the lad thereupon returns to his own branch at his own home until he receives his papers. While he is actually undertaking his service, the local training officer keeps in touch with him by correspondence as far as possible and a careful check is kept at headquarters on all staff undergoing training and National Service, so that they can be contacted again immediately on their release.

It is, as yet, too early to come to any definite conclusion as to the success of Planned Employment, since the release from National Service of the first trainees will not take place until the end of this year. The initial response of the lads undergoing the course has, however, been good and there is every reason to suppose that the course will yield results in the form of better morale among juvenile workers and their return after completion of their National Service.



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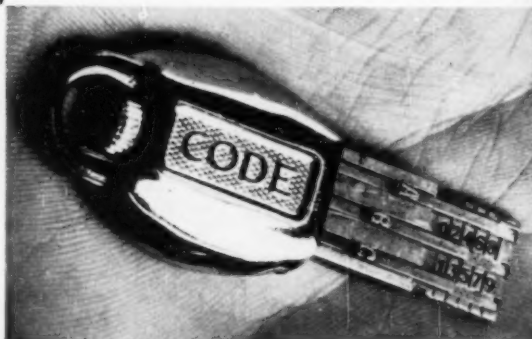


DISAPPEARING DOOR

GARAGE doors have a habit of being too tight or too loose, or if they are of the sliding variety then the tracks get filled with dirt. Someone—possibly in desperation—has designed a garage door that does not slide or open inwards or outwards. Known as the Up and Over Door, the name gives the secret of its operation—you lift a handle shoulder high and the doors swing into a position inside the garage parallel with the roof.

COMBINATION LOCK

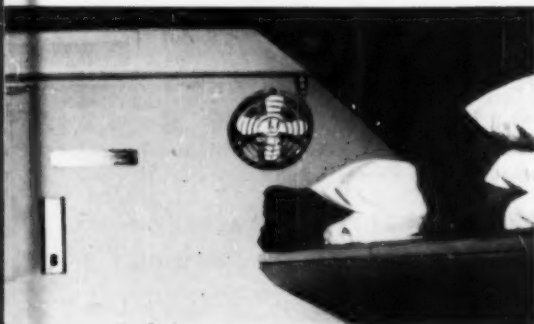
ON the secret list during the war, and now available to everyone is the Code Lock. It is a new system of locking which eliminates dangers arising out of lost or stolen keys, and couples the simplicity of the ordinary lock with the security of a combination safe. The lock is neutral and only acquires its own particular combination after an adjustable key has been inserted. The key has six pins that can be altered to any one of a million combinations.



HARD CURRENCY FAN

HELPING to increase exports to Canada is a specialised British produce—a lightweight electric fan for aircraft. The manufacturers have supplied 320 of the fans to Trans-Canada Air Lines.

The first aircraft to be fitted has seven fans, which are arranged for individual control, the switches being in charge of the steward. There are four fans in the front main cabin, and two in the rear cabin.



FROZEN ASSET

FISH, meat and perishable goods can now be displayed in a shop window under the most hygienic conditions even in hot weather. This answer to the shopkeeper's dream of a display of food that will not go "off" or get contaminated by flies is the I-Store refrigerated shopfront. The shop window is hermetically sealed and double glazed and filled with dehydrated air. Sliding double glazed doors are fitted at the back, and air is kept cool by refrigeration.



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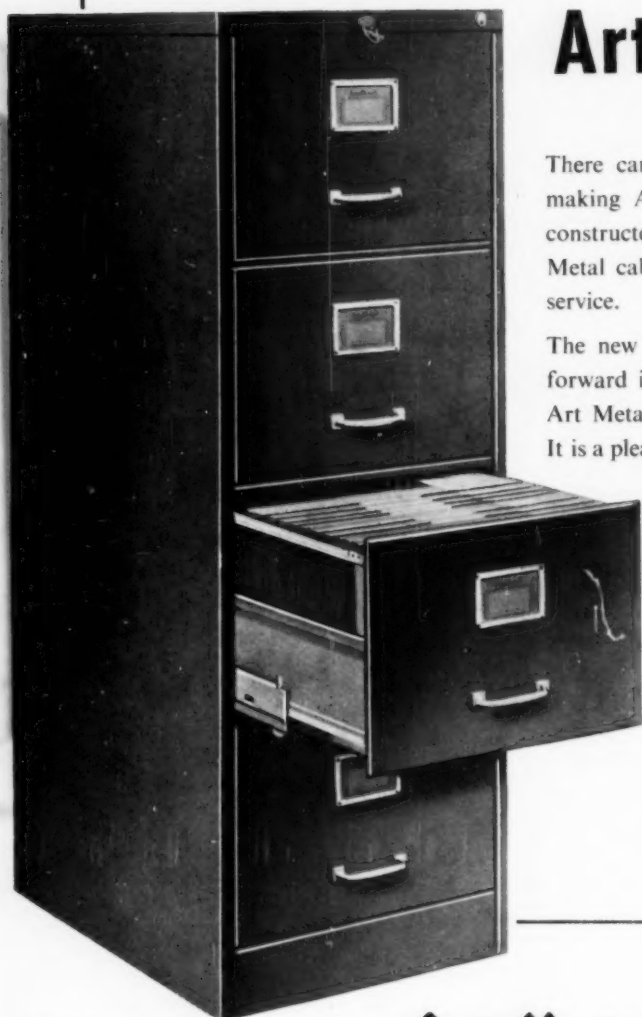
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This Mechanized System Handles Order and Account Routine

By P. H. BILLINGTON

Accurate and speedy handling of orders for numerous products from many customers all over the world calls for careful organization. With the aid of mechanized equipment the County Perfumery Co., Ltd., have solved this problem, and have tied the order and account routines in a system which provides positive checks at every stage.

TO describe Mr. J. D. Storer, A.C.A., as a man with a mind for mechanization would be no exaggeration, for, as Chief Accountant and Secretary of the County Perfumery Co., Ltd., he is responsible for the office organization at their Stanmore headquarters. Problems of manufacture and delivery rarely worry him, for when he has a new idea and the required gadget is not available, he has it made and fitted on the spot. This approach, together with the fact that he has initiated much experiment on the question of system, has resulted in a very high standard of mechanization in his department.

The order and account routines are so tied up with each other that

there is always a positive check—sometimes two or three—on every transaction, and by departments being kept fully informed of the complete system, and working as a team, mistakes are virtually impossible. Many different ways have been tried for dealing with a very large number of customers all over the world, and it is no easy task to ensure complete accuracy.

Several queries, each the responsibility of a separate department, may be contained in one letter from a customer, and this is the first problem to be dealt with. Nowadays it is controlled from the incoming postroom where directives are added to the mail as required, each department receiving the letter in turn together with the

necessary instructions for its disposal. Where there is any evidence of a direct order in a letter, this is extracted and written by hand on an order form (Figure 1, overleaf). In the case of a salesman's order coming in, the same standard order form is used, this being made out by the salesman himself. The order is made out in duplicate, one copy going to a central control and the other to the invoicing department for the invoice to be pre-headed and the address labels made out ready for the factory.

A card is kept for every customer, and where there is more than one branch, one is kept for every branch with cross references. All orders are checked for correct account number this being a very important item in the system. Again after much experiment, it has been found that the only practical solution is the use of a vertically rotating card index. Here, all customers' cards are kept in strictly alphabetical order, and it is simple to interpolate new cards as required. There is no strain on female staff, no overloaded drawers which are difficult to handle.

The frequency and number of salesmen's calls are controlled from headquarters but they allow each man adequate time to find new business during his journeys. Nevertheless all customers are supplied



A bank of cabinets of address plates at the County Perfumery Co. Ltd.

Name Address P.O. Box City State Zip	CODE NAME CREDIT DATE	INVOICE NO. ORDER NO. 134932 CUSTOMER ORDER NO. CONTROL CARD NO.
CLAIM DESCRIPTION AND COMMENTS		CREDIT SANCTION REMIT
DELIVERY INSTRUCTIONS		GOODS TO NO. OF LABELS SHOWCARDS
Ref No.	LINE Description Price per Unit Quantity per Unit Net Weight per Unit Net Weight per Unit Net Weight per Unit	Amount of Purchase Tax
A476	Brilliant	
A477	Brilliant	
A478	do Tube	
A479	Brilliant	
A480	Quartz	
A481	Hollow Be	
A482	Hollow Be	
A483	Hollow Be	
A484	Hollow Be	
A485	Hollow Be	

COUNTRY PERFUMERY COMPANY LTD., STANMORE, MIDDLESEX.		INVOICE NO.															
		CREDIT LIMITS															
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		DATE	AMOUNT	AUTHORITY													

The internal order form (Fig. 1) and the salesman's journey card (Fig. 2)

with order forms, and if there is any possibility of stock falling to danger level before the salesman's next call, they are encouraged to send in direct orders.

At the moment there are six double rotating units in use and as each card contains particulars of the account number, credit limit, purchase tax and the like, the unit is virtually the basis for the whole accounting system. Cards must be available instantly so that bad debts or blacklisted clients may be noted, though as this form of trouble accounts for only $\frac{1}{2}$ to 1 per cent. of the total, there is not very much to worry about.

Approximately 20 pieces of paper are issued to every customer in the course of the year, and this constitutes quite a large amount of paperwork. A folder is made out for every client and stamped with the appropriate address plate, files being maintained in account number sequence. Here again there is a check. Documents cannot be accepted for filing without a folder, and as no folder appears without its account number and title, one process *must* follow another to complete the routine. As filing is by account number and then by name, a further check is maintained against the card index where all the names are firstly by alphabet and then by address.

As every item despatched is in standard pack sizes, pricing presents little difficulty. The standard price is simply checked and noth-

ing further is required except in cases where special terms are stipulated. A punched card machine does the rest by prepunched cards for each line of the order, and once more experience has shown that the best method of filing these cards is in cabinets.

From the punched cards a three-set statement is prepared, two copies being filed in ledger binders under account number, and all payment being checked against the card index if not accompanied by the account or statement. A copy of the account goes to the credit control and cash items are handwritten in, so keeping the last available monthly statement up to date. A control account proves each ledger before release, and after addressing, the punched card account number and the address plate number appearing on each statement must agree.

things right before his supplies are cut off.

In the addressing section of the office there are two complete systems, one for statements, listing and long runs, the other for invoices, labels and short runs. There are two distinct advantages about this. Firstly, the alternative plates cannot be misfiled in the wrong section owing to their difference in construction, and secondly two simultaneous operations can be carried out at the same time. A section of the cabinets used are shown on page 63, each girl having her own little section for ease of operation.

After despatch, the order goes for invoicing on the punched card section. Files of pre-punched cards are maintained, which at the time of punching are carefully agreed with a pre-punched list of the price for standard packs of each commodity. These pre-punched cards are "pulled" against standard packs despatched, and at the same time, corresponding pre-punched cards are "pulled" for purchase tax, this being essential for the firm's accounting as well as a help to the customer when he gets his invoice. The invoice and original order then go for invoice checking, and any special delivery or other instructions are typed on.

Finally the order returns to the order control section as a clearance and is eventually filed in the customer's file. Thus is the circuit complete.



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How to Control Labour Costs in the Smaller Factory

By **KENNETH B. MITCHELL, Aft. I.W.M.**
PRODUCTION CONTROLLER AND COST ACCOUNTANT
CUNDALL FOLDING MACHINE CO. LTD.

By using a technique of clocking on and off for all jobs, the smaller firm can control labour costs without the expense of an elaborate costing system. The method here described is simple, direct and easily operated. It applies to maintenance and non-productive, as well as to productive, jobs, and has been proved to give results without the need of a large clerical staff.

WHAT are my cost comparisons?" is the question most anxiously asked by top management in many businesses to-day. It is also a question most urgently needing an accurate answer in these times of competitive marketing.

Elaborate costing systems give a high degree of control in larger firms. But the costs of installation and maintenance often make them prohibitive for the smaller concern. The alternative of modifying an elaborate system down to a suitable size-relationship is usually unsatisfactory, essential features being altered in the process and fundamental benefits lost.

For the smaller firms a costing system must be simple, direct, and easy to operate. It must give the required results without necessitating a large clerical staff. Here are details of such a system which was installed by the writer and has been of great value in controlling labour costs when on a time basis of payment. Very few smaller factories are able to afford the more detailed systems of payment by results or bonus systems.

The three features of the system are:

1. All jobs are clocked on and off. Where a clock is not available, a time sheet can be used to give the same details.
2. Maintenance and non-productive jobs are similarly controlled.

3. Times on job cards are extended, costed and posted to cost record cards.

On posting to the record card the cost clerk automatically compares the present times with the previous performance, preferably each man against himself (allowing for the fact that jigs, fixtures and new methods can materially alter times), or against a predetermined cost and time. A performance limit is set by the management, i.e. 25 per cent. above normal time, according to the efficiency of the particular machine tool. The times which need the management's attention are then reported on the form illustrated on page 68, the gross variance being shown in red.

Where it is possible to analyse the job into a predetermined or standard time this should be done, since in showing the variance of an operator against himself the basis of comparison may be a high one for the specific job, whereas the standard time will show the time in which the job *could* be done, thus giving rise to a more effective variance.

It may be found that time is not available to consider each job separately to assess a standard time. This difficulty may be overcome by taking an average of past performances and assuming that this average is reasonable when compared with the drawing. The efficiency of the machine tool must be taken into account when the

average time is ascertained, and for this reason it is suggested that top management, through the works manager or machine shop foreman, should approve the time which is to be set.

Similarly, in setting the standard time for a job completed manually, allowance should be made for any equipment (e.g., pillar drills, etc.) which may be used, as this factor will influence the standard time.

When operating against standard times, various allowances will have to be given. These may be necessary because the normal material is not to hand and a substitute has had to be used, e.g., $\frac{1}{2}$ in. dia. bar not in stock and a shaft must be turned from 1 in. dia., causing extra time to be consumed on the batch. This may be noted on the job card and the cost clerk will make allowance for this when showing his variance.

Another variance may occur through a machine tool breakdown. When this occurs it is important that the operator clocks on a "waiting time" card, and then, running again, clocks back on to the production card. It has been found helpful, from the cost office viewpoint, when this breakdown is noted on the production card.

To ensure the efficient operation of this scheme it is essential that the standard time shall be capable of being attained. Friction will result if it is proved that the time set

CLOCK NO.	NAME	PART NO.	DESCRIPTION	OPERATION	DATE JOB COMPLETE	TIME TAKEN			PREVIOUS TIME TAKEN					VARIANCE		REMARKS
						NO. OFF	TOTAL HOURS	MINS. EACH	CLOCK NO.	NAME	NO. OFF	TOTAL HOURS	MINS. EACH	TOTAL HOURS	MINS. EACH	
18	Best J	E120	Bracket	Shape	16/10/49	60	30	30	18	Best	60	20	20	10	10	
27	Edward G.	A126	Pillar	Turn	24/10/49	300	25	5	27	Edward	300	12½	2½	12½	2½	Man was sick previous day.

A simple time chart can be used effectively and cheaply to establish standard times for controlling labour costs. The variance should be shown in red.

is not a reasonable one and it is for this reason that an average time is set and not the lowest time recorded. The standard time should be recorded on the cost record card, allowing the cost clerk to make an automatic comparison when posting. The whole scheme has been designed to be flexible and many readers will be able to incorporate improvements and refinements according to their own organization and production methods.

Records Must be Available Quickly

It is essential that this report be completed as soon after the job is finished as possible, so that the management may take up each variation as a "live" variance, and not one that is lost in the mists of history. No one in authority can successfully take up a variance which is so old that the operator is unable to remember the job.

It is not the purpose of this article to enter into the method of dealing with the responsible operator. This is a highly individual matter, and depends upon the works manager, the operator, the facts of the variance itself, and the policy of the firm. It has however

been noted that when the works manager has spoken to the responsible operator, there has been a marked improvement in time reduction, and this improvement has been of a permanent nature.

The personal interview with the works manager is stressed. It is the opinion of the writer that individual percentage efficiencies shown to the shop in general do little good on the shop floor—except where a group bonus system operates. For example, it would be possible to show these time variances on a shop notice board, but the operators respond better to the personal interview, especially where the works manager's personality is felt and respected.

If the policy of the concern is to promote junior executives from the shop floor, a perusal of the past forms will give management a guide to the candidate's efficiency performance, which then may be coupled with other decisive factors.

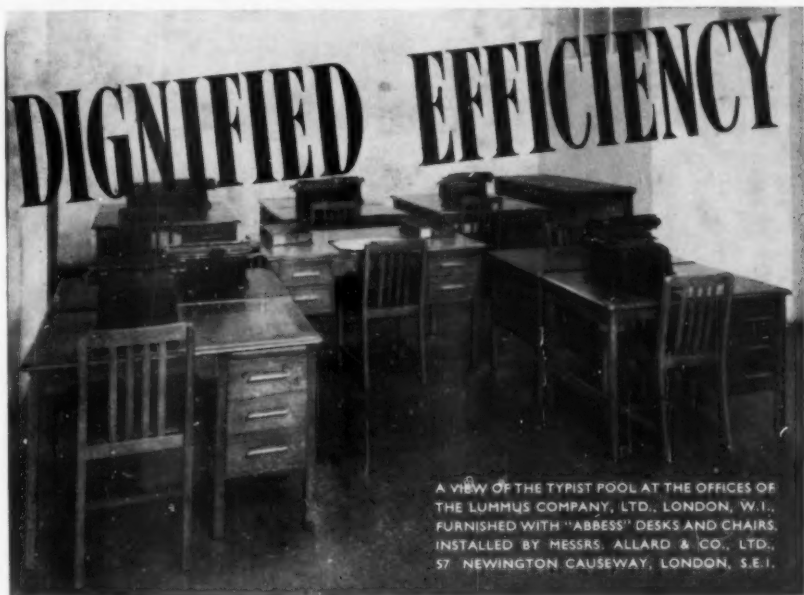
The advantages claimed for this method are that not only is it applicable in the smallest concern, at very little expense, but it can be used departmentally in the larger firm, with ease and simplicity. Inefficient operators may be singled out from a survey of previous forms, and with intelligent use the

form will focus many matters requiring investigation. During the personal interview, many factors will emerge about the state of the operator's machine, which often saves pounds in maintenance charges at a later date.

Checking Technical Performances

It may become apparent that certain jobs are frequently recurring with a variance, and on investigation this may be found due to some technical difficulty. Action should be taken at once to reduce the difficulty to a minimum or to revise the standard time in the case of a job which is not able to be modified.

All revisions of method of this nature must be notified to the cost office, giving full particulars and the revised standard time where applicable. It should be made known to all operators that they may question the standard times if proof can be given that the limit set is too fine. Attention to these objections will result ultimately in a control system which is regarded as fair both from the managerial, and from the operators' point of view.

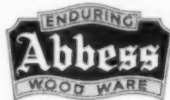


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Short Cuts to OFFICE EFFICIENCY

Short cuts to efficiency are especially welcomed when they concern the Wages Department. Here are a series of ways in which time and labour can be saved in handling P.A.Y.E. and other details.

1. Omit the Pence

IN the tax deduction sheet or personal record sheet, there are usually six columns in which figures are inserted, and some writing in connection with this work can be eliminated. For a start, when deducting the free pay from the total gross pay, the figures in the pence column of the total taxable pay to date should be omitted as they serve no purpose in arriving at the tax due. When this has become habitual, the figures in the shillings column of taxable pay should be reduced to the nearest round figures of 5/-, 10/-, or 15/-. After practice it will be found possible to deduct mentally the free pay from the gross pay, and hold in the mind the figure of the taxable pay. Reference can then be made to the tax tables and the figures of tax due to date inserted.

When dates are inserted it is a good idea to use a rubber stamp—it is surprising the time which is wasted in offices by the writing in of dates with a pen. Tax tables are a little cumbersome to use, and it is much easier if the relative pages

of the tables are torn out each week and clipped to a sheet of cardboard. The cardboard should be roughly 9in. by 10½in., and folded in half lengthwise. Table A of the tax table can be clipped to the front of the folded card and table B placed inside the folded portion so that when the card is open the table is flat.

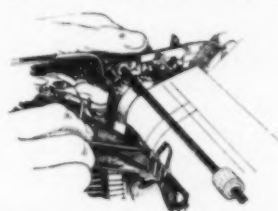
When tax is not normally being deducted owing to the application of a high code number, or any other reason, the free pay should not be entered weekly but at intervals of four weeks or longer. The approximate position of the employee's liability to pay tax should not, however, be forgotten.

2. A Useful Record

MANY firms employ young workers, whose rates of pay are increased, automatically, by a certain amount every year—for instance on the anniversary of the commencement of an apprenticeship. When apprentices attain the age of 18 their rate of contribution for National Insurance also increases. Frequently details of such

Concerning Straight Lines

It is a pity that there is no attachment that will enable the typist to produce an unbroken vertical line on the typewriter. One way to make a neat vertical line (and it costs nothing) was described in the *Imperial News*, the house organ of the Imperial Typewriter Co. Ltd. As can be seen from the sketch, the line-guide scale on the machine acts as a rest for the pencil, and by keeping it steady, and, after releasing the platen ratchet, rotating the platen by means of the left hand knob, a straight line is obtainable. If a continuous horizontal line is required, the same procedure can be adopted by operating the carriage release and running the carriage along



from right to left. To get a black and even line it is better to use a ball pointed pen in place of an ordinary pencil.

The Imperial machines make the task easier still, as they have two small notches cut on the top edge of the line-guide scale which tend to hold the pen or pencil in position.

changes are entered in a diary or elsewhere. Where the number of workers in this category is large, an appreciable amount of writing is involved, which not only takes time and labour but also increases the chances of errors being made.

By using a sheet of the type shown below, the record becomes more or less permanent, and by adding details of new employees, it is always up-to-date.

The vertical lines on the sheet

NAME	JAN RATE INS.	FEB RATE INS.	MAR RATE INS.	APR RATE INS.	MAY RATE INS.	JUN RATE INS.	JUL RATE INS.	AUG RATE INS.	SEP RATE INS.	OCT RATE INS.	NOV RATE INS.	DEC RATE INS.
J. Smith		24					12/1950					
J. Alexander				12	12/1950							
P. Roberts										10	10/1949	

are divided for each month. The first column contains the date of the wage increase (for any year), until the completion of the apprenticeship or other special period. The second column contains, in red ink, the date followed by the year when the insurance contribution rate is increased. This form of record can be used in conjunction with a weekly wages notes sheet, to which the information is transferred. The weekly sheet would also contain information for the current week, such as special deductions, posting instructions.

3. Use a Rubber Stamp

TIME can be saved in the wages department by the use of a simple printing outfit. A typical wages book contains 10 vertical columns, with headings for rate, hours, wages, expenses, gross amount and the deductions for income tax and employee's insurance, leaving the balance of net amount payable. This is followed by the employer's insurance contributions and, with some firms, deductions for holiday credit stamps.

When three in one systems are not in operation quite a lot of writing can be eliminated by stamping with a rubber stamp the employee's, employer's and holiday stamp figures. Using a small printing outfit, the numbers can be spaced out, so that by one stamping the figures are shown on the correct line. The result is that a page that would require several minutes to be filled in by writing, can be stamped in a matter of seconds. The stamp can also be used to stamp on the wages envelope the amount of the employee's insurance contribution.

4. Eliminate Envelopes

WAGE envelopes are one of those necessities which although serving a useful function are, in reality, a waste of time and materials. Thomas Peake (Tileries) Ltd., have surmounted the problem by having the time sheets made a little larger than usual and crimping the edges with a crimping machine, thus completely eliminating envelopes.

NEW for your OFFICE

Steel Cabinet

THE two drawer steel cabinet illustrated here is finished in grey—a colour which is becoming increasingly popular for office equipment. The drawers are carried on fully progressive ball-bearing roller suspensions which have a cadmium plated finish. Automatic control locks operate both drawers, but a model without locks is also obtainable.

The compressor plates are adjustable, smooth in action and very simple to manipulate. The streamlined handles and card holders are of anodized aluminium. The overall size of the unit is



supplied complete with a trolley, or separately for use as a desk top filing cabinet.

The cabinet is equipped with a close fitting lid which can be conveniently stored on the file when not in use. Construction is of light alloy, riveted to form a rigid unit, and the tray is fitted with steel runners. The trolley is strongly constructed and has large diameter wheels, making it easy to move around. The time saving value of the trolley is considerable, as it means work can be brought near at hand, and when the folders are being referred to frequently they can be located in the most convenient working position.

The trolley measures 30½ in. high by 12½ in. long by 17½ in. wide and the cabinet is 11½ in. high by 12½ in. long by 17 in. wide. Both the trolley and the cabinet have a black crackle finish.

—(Enquiry Ref. No. 01/2.)



31 in. high by 19½ in. wide by 28 in. deep. Both quarto and foolscap types are available.

—(Enquiry Ref. No. 01/1.)

Mobile Filing

ONE of a number of new filing cabinets is the *Vetro Minor* filing unit. It is available in foolscap size only and is marketed by the manufacturers of *Vetro Mobil* suspension filing equipment. The unit has many uses and is especially suitable for the executive. The cabinet houses up to 50 *Vetro Mobil* folders and can be

Pocket Duplicator

IN this age of complicated office machinery we find it almost a relief to mention something which is extremely simple in design yet remarkably useful. The machine in question is the *Bandaretté*, a miniature duplicator which seems to have unlimited applications. Working on the same principle as a normal spirit duplicator, it can be used (by very unskilled labour) for dozens of small, limited run,

BUSINESS



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copying jobs that are to be found in the office, factory and shop. It can deal with such things as labels, clock cards, garment marking, price tickets, box marking, etc.

The *Bandarette* consists of a fluid container, a pad and a roller—all in one. To use it, the information to be duplicated is written or typed on a master which is then fitted in a frame. Copy paper is moistened with the pad, the frame

placed over the moistened area and the roller moved across the master once. The machine is supplied complete with a roll of masters, frames and a bottle of spirit.

—(Enquiry Ref. No. 01/3.)

Litho Plates

TWO new products now make the user of offset printing machines independent of outside services for litho plates. It is no longer necessary to wait for the plates to be prepared as this can be done on the user's premises whenever the need arises, at a fraction of present costs. These new pre-sensitised storable plates require no preparation before exposure and eliminate the need for the whirler, coating and high intensity light.

There are two types, the first being *Bromolith*, which can be used for runs up to 20,000. Any type of work such as letterpress, line or half-tone can be undertaken. The plates can only be used with the *Copycat* machine.

The *Gevalith* sheet—the second type—effectively replaces metal plates used with offset printing machines for direct typing and drawing, etc. *Gevalith* produces prints of high quality, is less susceptible to fingerprints and can be handled more easily than any other type of direct image plate.

—(Enquiry Ref. No. 01/4.)

Everything to Hand

MANUFACTURERS of accounting machines pay particular attention to the design of their equipment so that the operator will maintain a high standard of accuracy. But output and accuracy will both suffer whatever a machine's design, if ancillary equipment such as side tables are not the right height or in the best position. One manufacturer of office furniture has realised this problem and answered it by producing a machine accounting unit.

This unit has been developed and proved after experiments with actual machine operators to give

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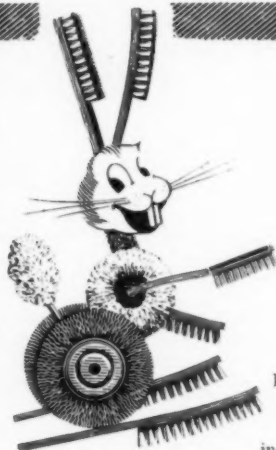


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maximum efficiency with the minimum of strain. It consists of two cabinets which are linked together with a space for the accounting machine in the middle. In addition there is a lamp standard and reflector which gives even illumination and can be adjusted to any position.

The left-hand cabinet incorporates a patented self-lift draw-leaf which extends, lifts and locks in position by finger touch to give a firm level writing surface with knee space beneath it. The right-hand cabinet is fitted with a sliding top which, when extended, brings ledger trays within easy reach of



the operator. When not in use, ledger trays can be housed in the cabinet drawers. The left-hand cabinet can be fitted with two, three or four drawers depending on the depth required, and the right-hand cabinet can have one, two or three drawers. A special drawer is provided to house machine parts such as the control bar.

Another feature is a wiring channel which couples to conduits built into the cabinets. Channels can be fitted with 5 amp. or 2 amp. 3-pin sockets for machines. Provision is made for screwing the unit to the floor, and it is suitable for any make of accounting machine.

—(Enquiry Ref. No. 01/5)

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Therefore, any methods which ensure greater control and more efficient employment are more than desirable.

Indeed, if employers get that little extra output per hour per man they are not only helping their own economies—they are assisting the National need.

There are a number of Shannon visible records which subserve this end. There is, for instance, the P.A.Y.E. record which *visually* controls the pay-as-you-earn entries of every employee (and which is officially approved). And there are also visible records which show at sight which employees are fit for promotion, where they work, what they are paid, whether married or single and a host of other items of information.

These records can be had either as standard (hence quicker and cheaper) or especially to your own design. Whether you employ ten or ten thousand people, such records are applicable.

Of particular interest to the business or municipal executive who wishes to have both visual records plus the associated papers—references, correspondence, certificates, etc.—is the Shannograph system for Personnel control. The flat-top visual edge conveys a host of facts without opening any file. The hanging file itself holds all the papers. The slotted-in record card fits in the front of each file.

This system can go into your existing cabinets or other equipment.

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—(Enquiry Ref. No. 01/6.)

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Management Techniques Cut Building Costs

By ROLT HAMMOND, A.C.G.I., A.M.I.C.E.

The application of time and motion study to work on experimental building sites has led to the development of new machines and methods that can be used by the smaller builder, to increase his output and to cut his costs.

THE application of time and motion study to works and factories is now accepted as a standard method of increasing productivity. But it is only in comparatively recent times that this technique has been directed towards the building and civil engineering industries.

Increased output at lower cost is as essential in these, as in other, industries to-day. Considerable significance therefore attaches to the work being done by the Field Test Unit of the Ministry of Works at the Thatched Barn,

Barnet; this famous roadhouse has for some time been the headquarters of what may be termed the operational research side of general building research, its activities being mainly concerned with carrying out practical tests of any idea which seems to be applicable in the building industry.

Prototypes of machines, devices and processes are tested under conditions which simulate "average" site conditions, and if the results of preliminary tests are satisfactory the machine or equipment is given a final acceptance test under

actual site conditions on normal building work. Similar procedure is adopted for testing new materials, components and technical processes, tested for their practical value and also tried out under site conditions.

Time and motion study is the basis of all this work, which culminates in some instances in a series of "experimental" building sites. Here the object of the study is to break down a house, for example, into a number of separate technical units on each of which individual study can then be concentrated; thus, floors are costed as complete floors, roofs as complete roofs, and so on with other building components. One of the functions of the Field Test Unit is to provide some guide to the possible savings which may be expected to result from adopting some particular process or form of construction.

This experimental work often leads to a modification of the time and motion study "standard" adopted, on the basis that the new departure from the original standard will enable higher efficiency to be attained. It is expected that in the near future time and motion study methods will be applied to the wider aspects of housing, and more especially to a consideration of the optimum size of a housing estate to which factory methods



A modified agricultural tractor with concreting skip.



This concreting boom, operated by six men, can lay 30 cubic yards an eight-hour day.

can be applied instead of employing traditional building methods; this, of course, will be a long term research and the Field Test Unit will be concerned only with the prototype aspect of it.

Developing New Machines

A very interesting side of the work is the testing and development of new machines for handling concrete, for excavating and for handling bricks, to which time and motion studies have been applied with results of great economic value. Observations on several typical building sites have proved that with a 10/7 cubic feet concrete mixer, teams of 5 to 12 men are employed in placing concrete by means of the conventional wheelbarrow. For a pair of houses, this may mean anything from 90 to 300 man-hours, depending upon the ground conditions and the general level of efficiency on the site.

The wheelbarrow, though a very simple device, suffers from the disadvantage that it can take only $1\frac{1}{2}$ to 1 $\frac{1}{2}$ cubic feet of concrete at a time and is therefore expensive in labour, and discharge of a batch of concrete into barrows retards operation of the mixer. With a 10/7 mixer, duration of the mixing cycle is increased by about $1\frac{1}{2}$ minutes, thereby reducing possible output by about 30 per cent. Moreover, concrete in the last barrow will have been mixed for a much longer time than the concrete in the first barrow.

As a result of close study and careful timing of operations, the Field Test Unit has developed three noteworthy items of building plant, namely:

A tractor with a concreting skip;

A three-wheeled motorised barrow; and

A concrete transporter boom.

All are now on the market and some are operating on building sites under everyday conditions.

The tractor was developed from a standard horticultural machine and fitted with a skip of 7 cubic feet capacity; one skip is of steel with bottom discharge doors, the other of aluminium alloy, discharged by overturning. Tests proved that this tractor could transport this load of concrete on typical building sites with ease, and experience under everyday working conditions showed that with a 10/7 mixer and a team of 6 men, concrete can be placed in house footings at the rate of 1.33 man-hours per cubic yard, output for an eight-hour day being 36 cubic yards.

When working with a mixer of the same size and a team of 11 men on the same task, but using ordinary barrows, rate of concreting is 3.22 man-hours per cubic yard, giving an output for an eight-hour day of 27.2 cubic yards.

Capital cost of this machine is £445, and the hourly all-in operating cost apart from overheads is 4s. 9d.; plant and labour cost per

cubic yard for each of the two above examples is 5s. 9d. and 9s. 3d., respectively. Potential saving from using this machine rather than hand labour is 3s. 6d. per cubic yard, costs being based on a life of five years and a use of 1,080 hours per annum; labour rates are those applying to Area A. A gang of six men, with the aid of this machine, can achieve an output 32 per cent. greater than that of a gang of 11 men using conventional wheelbarrows.

Both types of skip are used for placing concrete, the great advantage of the overturning skip being that it can also be used for placing hardcore and for the transport of loose material. A useful fixture attached to the tractor is the bulldozer blade which can be used for back-filling trenches.

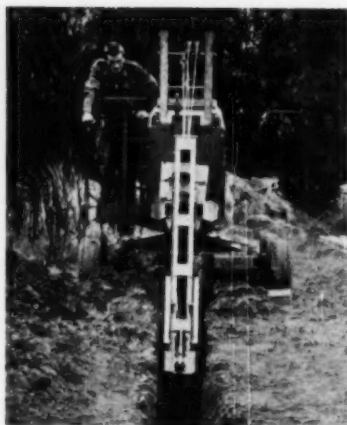
A Motorised Wheelbarrow

The three-wheeled motorised barrow also has a skip of 7 cubic feet capacity and is driven by a 3 horsepower air-cooled petrol engine, and is steered by the single driving wheel, engine and transmission unit turning through a full circle. Although time and motion study revealed that this unit does not give as good a performance on rough ground as the tractor, with a 10/7 mixer and a gang of six men, the same output as the tractor can be obtained provided that soft ground is covered with mesh, that ramps are used to

mount obstacles and the gradients are not excessively steep.

Potential saving amounts to 4s. 8d. per cubic yard, plant and labour cost being 4s. 7d. per cubic yard. Capital cost is £120, with hourly all-in operating cost exclusive of overheads being 1s. 9d. Output of concrete for an eight-hour day is 36.0 cubic yards, giving a performance of 1.33 man-hours per cubic yard for 6 men placing concrete in footings. Estimated life and usage is the same as for the tractor.

The concreting boom (Page 81) is estimated to cost £120 and is used for transporting concrete from a mixer to foundations. Working with a 10/7 mixer and a team of 6 men, concrete can be placed in footings at the rate of 1.72 man-hours per cubic yard, output for an eight-hour day being 30 cubic yards, potential saving amounting 4s. 4d. per cubic yard. Costs are based on the same premises as for the tractors, and time is allowed for moving the boom and mixer twice a day.



A light mobile excavator for house footings.

The gear can be quickly erected or moved by the concreting gang. Later, it is proposed to re-design boom and portal frame in light alloy, when a 50 per cent. reduction in weight is expected.

As a final example of this work, the development of a brick clamp

barrow is of considerable interest, because many inventors have tried to introduce new methods of handling bricks, often without success. The Unit has developed a special clamp barrow which costs £21 and has an all-in operating cost of 2d. per hour excluding overheads.

With a team of three men, two clamp barrows and a platform hoist will handle 1,670 bricks per hour from main stack to scaffold, giving a potential saving of 2s. 1d. per thousand bricks compared with the hod method. Cost is based on a life of three years, an annual usage of 1,080 hours with the cost of the platform hoist 2s. 3d. per hour.

In contrast, a team of three men with wheelbarrows and platform hoist will handle 1,350 bricks per hour from main stack to scaffold, showing a potential saving of 9d. per thousand bricks. The same team, using hods, will handle 900 bricks an hour over the same distance, at a labour cost of 8s. per thousand bricks.

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Operation is automatic, the wire being self fed continuously from the coil and the maximum amount of feed is 2½ inches. For general purposes the largest diameter steel which can be handled is 0.06-in., or 0.080-in. for non-ferrous wire. These figures are to a cer-

tain extent approximate and depend on the individual job to be handled. The feed slide is infinitely adjustable up to the maximum and a ball type gripping mechanism is incorporated which provides the necessary accuracy. The five horizontal and five vertical rolls for straightening are individually adjustable and are fitted to a straightener bracket which is built integral with the machine.

Adequate provision is made to alter the speed to 80, 100 or 150 r.p.m., and other intermediate speeds can be provided if necessary. Change of speed is effected by means of a three-step texrope pulley which is easily accessible. The motor is housed inside the machine bed and is adequately ventilated. Included in the standard

electrical gear is an isolator and starter with push button controls. Two extras are an interlock safety device which ensures that overloading and subsequent strain on the feed mechanism is avoided, and a wire tension controller.

The M.1.3.B. occupies a small amount of floor area (15 x 29 in.), and the external design is exceptionally clean. Working slides are totally enclosed with a hinged Perspex cover to avoid accidents. For setting purposes the whole of the top can be lifted from the main



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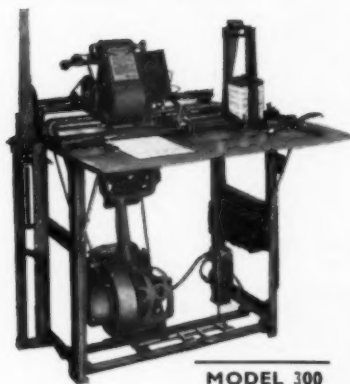
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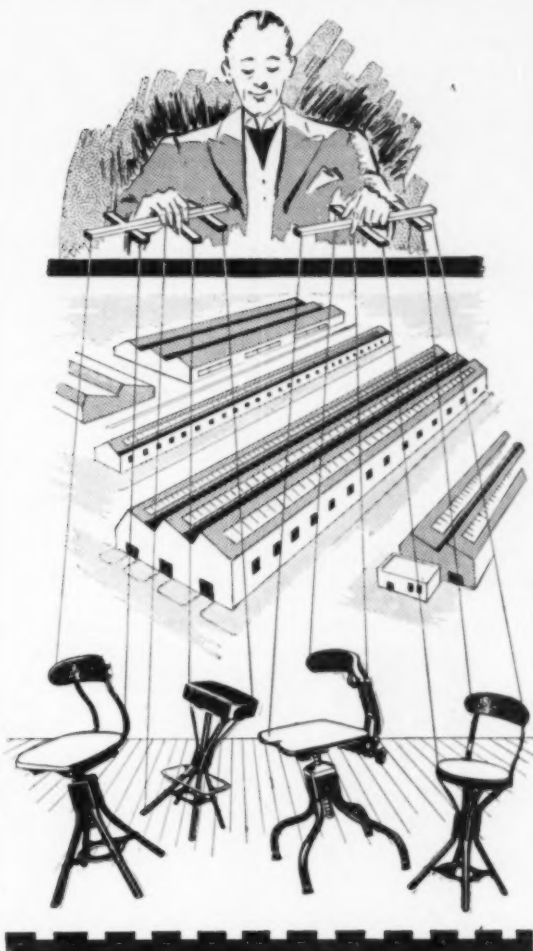
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casting, thus allowing access to the rear camshaft mechanism.

—(Enquiry Ref. No. J.50/1.)

Broaching Machine

INTENDED for high production work similar to that encountered in the automobile industry is a new double-ram horizontal surface broaching machine. Successful results have been obtained with the first of these machines when used for broaching cylinders, connecting rods and engine components made in tough steels. Under actual production conditions, and using a cutting speed of 25ft. per minute, an output of one complete connecting rod and cap

per 65 seconds is possible from rough forgings.

Built in 15ton and 25ton sizes, the machine is available with 66, 90, and 120in. strokes. Ingenious guards travel with the broaches on both the cutting and return strokes, completely enclosing the tools and lessening the chances of accidents or damage to the machine. On the 15ton model the cutting speed is infinitely variable between five and 21ft. per minute, and between five and 16ft. per minute on the larger types. In cases where the machine is subjected to abnormal operating conditions an automatic cooling device may be fitted to the hydraulic system.

A novel feature is the provision of universal broach inserts mounted in adjustable sub-holders, an arrangement which allows up to seven similar, but different size, components to be machined with one set of broaches. This applies to both upper and lower sets and a considerable saving of setting-up time is obtained. Because the inserts are adjustable, compensa-

tion for wear is easily effected, making it possible to maintain dimensional accuracy to very close limits.

Another refinement is the provision of a dual control panel within easy reach of the operator.

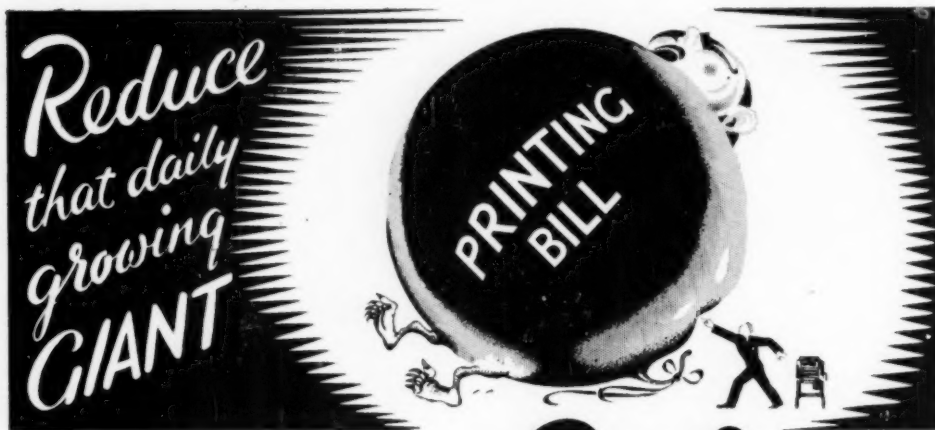
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to variable initiating of the weld and variations in magnetic conditions of the welding transformer core. Consistent welds are assured down to 4 cycles with a reliable contactor.

Another feature of this control unit is that only grid-controlled cold cathode valves are used, so that the equipment is ready as soon as it is switched on. The controller has the following range: independently variable weld time—4 to 50 cycles; independently variable cool time up to 50 cycles.

—(Enquiry Ref. No. J.50/3.)

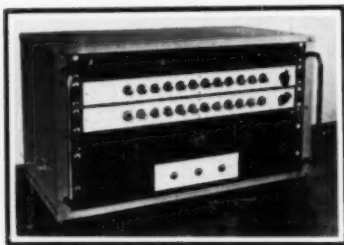
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THE ability of an electronic instrument to carry out a specific task and its ability to stand up to continuous operation under industrial conditions are two completely different things. The manufacturers of the type E.C.B. 144 electronic counter-batcher have gone to great lengths to produce a piece of equipment which is robust, and troublesome components have been eliminated.

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—(Enquiry Ref. No. J.50/4.)

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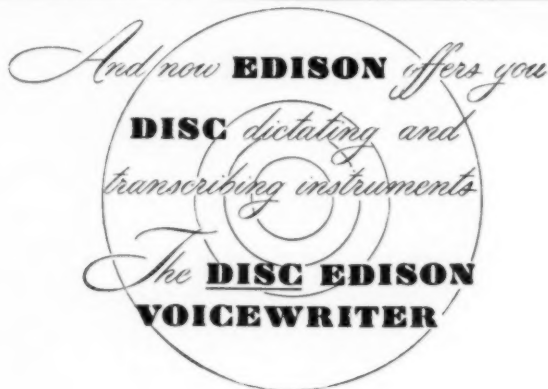
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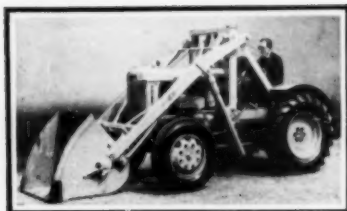
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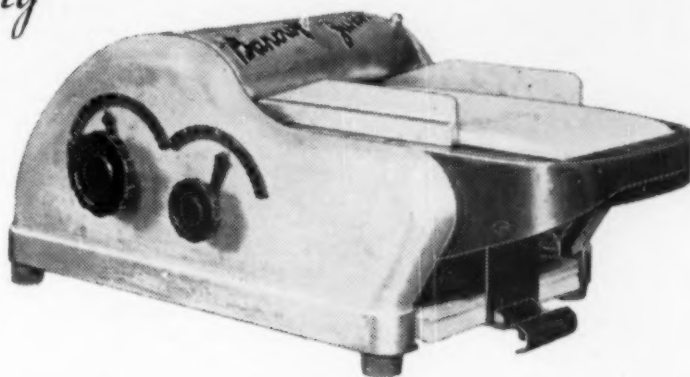
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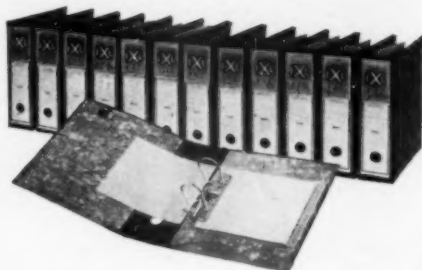
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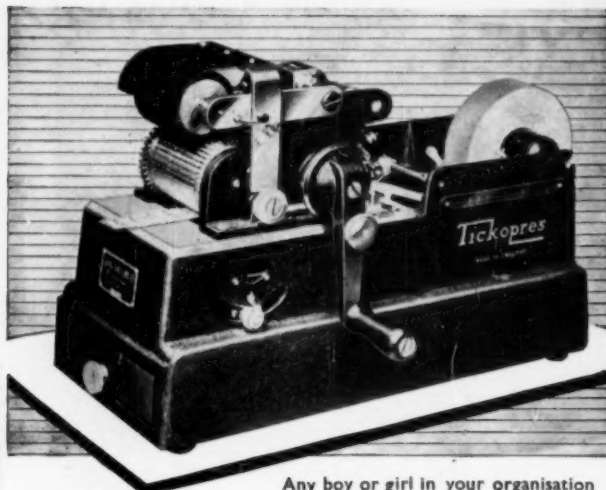
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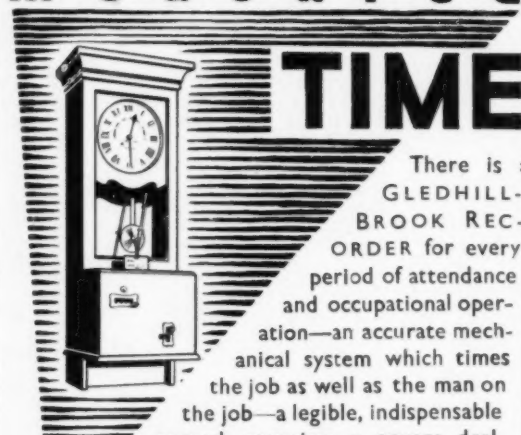
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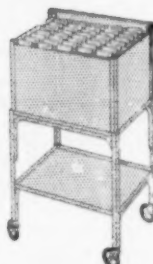
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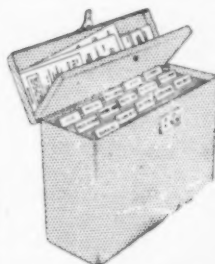


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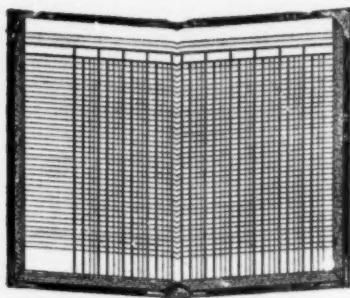
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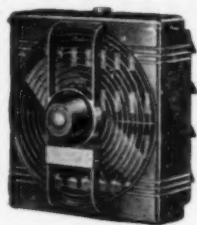


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SEATS—What You Must Provide

As from next October 1st employers are, for the first time, legally bound to provide seating facilities in factories. In this article an expert summarizes the new provisions and their effect on management

By RICHARD LAWRENCE

NEW legal obligations upon employers to provide seating facilities for workers come into force next October, and—the supply position being what it is—those managements affected would do well to investigate and provide for their commitments as soon as possible.

There is apparently a certain amount of confusion regarding the legal obligations of employers to provide seating, and the following summary may clear the matter up.

Under Section 3 (1) of the Shops Act, 1912, as amended by Section 12 of the Shops Act, 1934, the occupier of a shop must provide seats in each room in which

female shop assistants are employed in the proportion of one seat to every three female assistants. They must allow the assistants to use the seats whenever their work permits and exhibit notices in a prescribed form stating that the seats are there for them to use.

Under Section 44 of the Factories Act, 1937, all female workers in factories whose work is done standing must be provided with "suitable facilities for sitting sufficient to enable them to take advantage of any opportunities for resting which may occur in the course of their employment."

This section was amended and

extended by Section 6 of the Factories Act, 1948. The provisions of Section 44 of the 1937 Act will now apply to all male, in addition to female, workers. Moreover, where a substantial part of the work of any worker (male or female) can properly be done sitting, the employer must provide for any employed person doing that work a seat of a design, construction and dimensions suitable for him and the work, together with a footrest on which he can readily and comfortably support his feet if he cannot do so without a footrest. The seat must also be adequately and properly supported while in use for the purpose for which it is provided.

The provision of the Factories Act, 1948, came into force on October 1, 1948. Owing to the fact that, in 1948, the supply position in regard to industrial seating equipment made it impossible for all firms affected to obtain the seats necessary to comply with the law, it was stipulated that Section 6 of the Act should not come into force until October 1, 1950. It is this delayed action that has led to some confusion, as exemplified in the report in a popular magazine that a new law has been passed controlling seating.

The Present Position

The actual position as from next October may thus be summarized as follows:

Shopkeepers are bound to provide female assistants with seats in the proportion of one seat for each three assistants, and comply with



Seats—and footrests—must be provided for all factory workers where they can work while sitting.

requirements as to publicity of the facilities. There is, however, no similar obligation to provide seats for male assistants.

Factory owners must provide seats for the use of both male and female workers during rest breaks, and, where work can be done sitting, must provide suitable seats for this purpose.

There is no statutory obligation upon office managers to provide seating for office workers, except in cases where the office is an integral part of a factory and covered by the provisions of the Factories Acts.

The Gowers Committee in March, 1949, recommended that the provisions of Section 44 of the 1937 Factories Act regarding to the supply of seating for workers of both sexes for occasional use for rest when work is done standing should be extended to all office workers, and that legislation should also be passed to ensure that seats provided for use at work when the employee is normally

seated should be suitable as regards height and in other respects for the carrying on of work without undue strain or fatigue. It must be emphasized, however, that these recommendations are not (as yet) legally binding and will not be so until fresh legislation is passed to enforce them.

So much for the legal position. In point of fact, few employers today would limit themselves to a mere minimum compliance with the law. Unsatisfactory seating accommodation is an important contributory cause of fatigue, and thus leads directly to low productivity. There are a considerable number of seats on the market that have been specifically designed to meet the problems involved in long periods spent in routine work. They are apt to be more expensive than the standard mass-produced wooden chair or stool that is sufficient to meet the minimum legal demands of the Factories Acts, but the extra expenditure is rapidly recouped in extra output.

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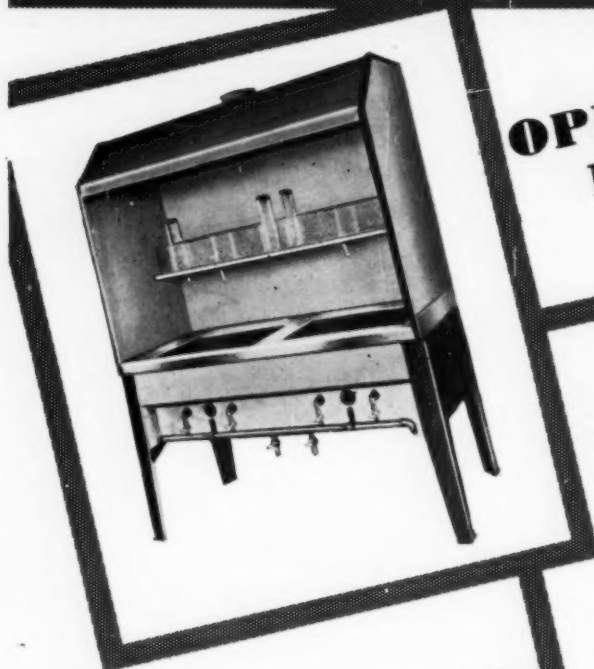


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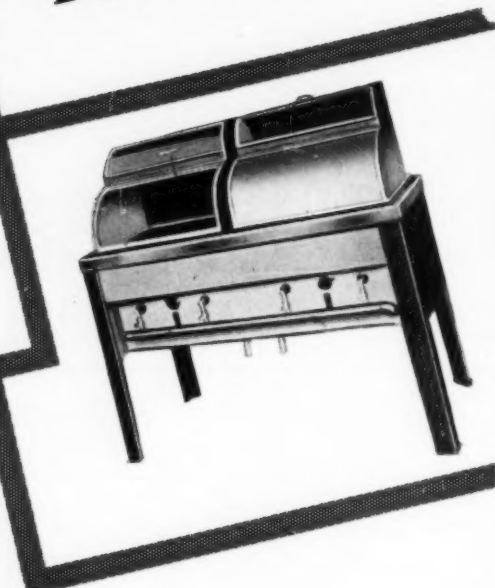
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B. 49

An Expert's Hints on Tasty Menus for Office Workers

By JUNE WOOLFE

AN office worker is reputed not to need as much food as his colleague in the factory. His daily energy requirements are estimated at 2,500 calories, as against 3,000 and 4,500 for industrial operatives, and the scale of rations issued to his canteen allows him proportionately less meat, cheese, fat and other essential foodstuffs. After he has risen early, however, suffered an hour or more's uncomfortable journey on his way to work, and spent the morning with urgent problems calling maybe for many visits up and downstairs or the expenditure of physical energy in other ways, he probably comes to his mid-day meal in the canteen as much in need of re-fuelling as the man from the production line.

But he uses up his energy through the nerves and brain rather than in physical effort, and his appetite has not the keen edge which calls for substantial meals of bulk food. Rather does he need a nourishing meal which he can digest.

Mr. E. N. Walker, catering manager in London for the Sun Life Assurance Company of Canada, has some useful observations to make on the subject. About 450 people, all of them employed on so-called sedentary work, use the company's canteen. In his approach to the problem of giving

One man's meat is another's poison. The office worker's food needs vary in both quality and quantity from that of the industrial worker. An expert here outlines the main differences and suggests, from practical experience, how the menus in an office canteen can be made tasty, nourishing and varied.

satisfaction to so many people, Mr. Walker has studied them almost individually. He has even served on the counter himself for many months, watching, listening and asking questions.

Two main points emerged: his particular clientele confirmed the principle stated above and preferred small, attractively served dishes to large portions of "filling" food, and they did not like made-up dishes such as shepherd's pie.

This prejudice cuts out much of the standard form of menu. It can, however, to a large extent be replaced by fish which supplements the small meat ration. If fish is fried or grilled and served with different sauces—which cost little—even cod can be interesting. When a joint is in short supply the better kinds of fish, such as turbot and sole, are sometimes strategically put on the same menu to ensure satisfaction to both the meat and fish eaters. When meat is available, the vegetables served

with it are chosen with great care. A very small steak when flanked with mushrooms, tomatoes and chips, becomes a satisfying and palatable meal, and is much more acceptable to the office worker than the same meat made up into another form.

Root vegetables are not generally popular and should be served tactfully in the winter when cabbages and cauliflowers are uneconomic. Buttered carrots, creamed mixed vegetables, braised leeks, onions and celery, are welcomed—and there are sufficient kinds of vegetables here to avoid monotony. Soup, of course, is a very good way of ensuring that the benefit of eating vegetables is secured and a meal which includes soup is sustaining without being too heavy.

To ensure that the maximum nourishment-value is retained, it is important that food should not be kept hot for any length of time before serving. This is taken care of by cooking separately for the three sittings of each luncheon.

Fruit and ice-cream is the favourite sweet, summer and winter. Steamed puddings, except in the really cold weather, are not very popular. The portions of pie served would probably seem very small to the foundry worker, but by making the pastry very short and so concentrating the fat content, the desirable smallness of bulk for the office worker is achieved. Rationed cheese and biscuits would be chosen frequently,



A scene in the canteen, where tables are arranged for groups of two, four, six or eight persons

especially by the men, if the cheese were available, and it has therefore to be offered as an alternative to the sweets.

Sweet dishes in general cost more than cheese, just as fish costs more than meat, and tinned meats more than fresh. In fact the cost of feeding the sedentary worker is bound to be higher than that of satisfying the larger appetites in industry, because of the necessity of supplementing his diet with unrationed foods. A careful balance between expensive unrationed foods and the cheaper form of dishes has to be kept.

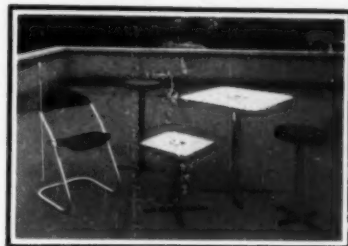
A change of surroundings at lunch time is as important to the office worker as to anyone else, and in this canteen the decoration aims at getting as far away as possible from the office atmosphere. The walls are cream with a red dado, the tables are red and blue, and the chairs blue and cream. And to give an added tone of restfulness particular attention is paid to providing soft and diffused illumination in the canteen.

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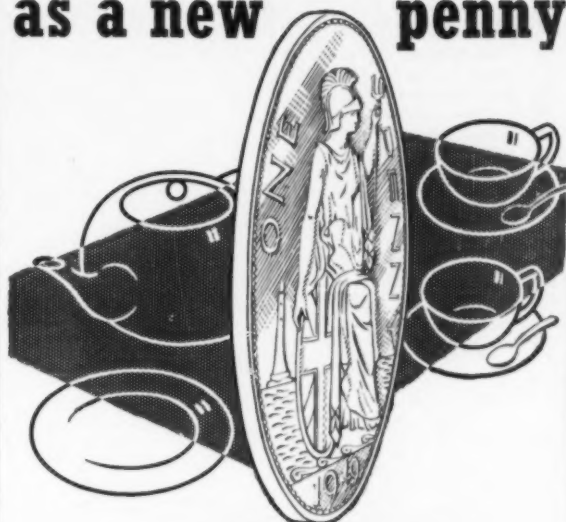
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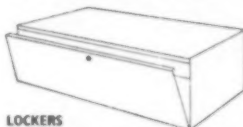
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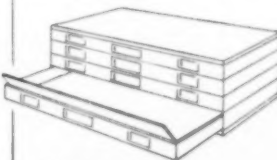
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